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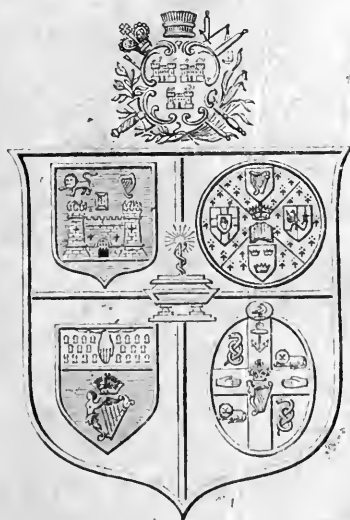
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Advertisements for the April Number should reach the Publishers by the 23rd of March.

BOOKS, PAMPHLETS, AND PERIODICALS RECEIVED—MARCH, 1886

1. Surgical Handicraft. By Walter Pye, F.R.C.S. Second Edition. London: Henry Kimpton. 1885. 8vo, pp. 546.
2. The Year Book of Treatment for 1885. London: Cassell & Co. 1886. 8vo, pp. 316.
3. Investigations into some Morbid Cardiac Conditions. By William Russell, M.D., M.R.C.P. Edin. Edinburgh: Bell & Bradfute. 1886. 8vo, pp. 148.
4. An Introduction to the Use of the Laryngoscope. By Archibald E. Garrod, M.A., M.B. Oxon. London: Longmans, Green & Co. 1886. Pp. 54.
5. Clinical Cases from Dr. Gee's Wards. By Oswald Browne, M.B., and D'Arcy Power, M.B. Reprint from St. Bartholomew's Hospital Reports, Vol. XVIII. Pp. 8.
6. Reprints of Cases. By D'Arcy Power. London. 1885. Pp. 10.
7. Deafness in Bright's Disease. By J. Walker Downie, M.B. Reprint. Pp. 4.
8. Nouvelles Archives d'Obstetrique et de Gynécologie. Première Année. No. 1. Paris: Félix Alcan. 1886. (Duplicate copies.)
9. Gazette de Gynécologie. Seconde Année. No. 5. Paris: M. O. Doin.
10. The American Practitioner and News. Vol. I. New Series. Nos. 1, 2 and 3. Louisville, Ky.: John P. Morton & Co.
11. The Archives of Pediatrics. Vol. III., No. 25. Philadelphia: John E. Potter & Co.
12. Les Nouveaux Remèdes. Février, 1886. Paris.
13. The Medical Herald. Vol. VII., No. 81. Louisville, Ky. 1886.
14. La Rassegna di Scienze Mediche. Anno I. No. 2. Modena: G. T. Vincenzi e Nipoti. 1886.
15. Diphtheria and its Management. By Joseph E. Winters, M.D. New York: Trow & Co. 1885. Reprint. Pp. 43.
16. The Polyclinic. Vol. III., No. 7. Philadelphia. 1886.
17. La Cronica Medica. Año II., No. 23. Lima: Carlos Prince.
18. St. Louis Courier of Medicine. January, 1886.
19. The Royal London Ophthalmic Hospital Reports. Vol. XI. Part 1. Jan., 1886. London: J. & A. Churchill.
20. An Experimental and Clinical Study of Air Embolism. By N. Senn, M.D. Philadelphia: Collins. 1885. Extract. Pp. 121.
21. The Western Medical Reporter. Vol. VIII., No. 1. January, 1886.
22. A Guide to the New Pharmacopœia (1885). By Prosser James, M.D. 1885. Second Edition. 8vo, pp. 119.
23. The Australasian Medical Gazette. Sydney, December 15, 1885.
24. Revue de Laryngologie. Février, 1886. Paris: Octave Doin.
25. Constitution and By-Laws of the State Board of Health, and Vital Statistics of the Commonwealth of Pennsylvania. Harrisburg: Edwin K. Meyers. 1885. Pp. 11.
26. Transactions of the Medical and Chirurgical Faculty of the State of Maryland for 1885. Baltimore: Thomas & Evans. 1885. Pp. 253.
27. The Prescriber's Pharmacopœia. Revised and Edited by Nestor Tirard, M.D. Lond. Sixth Edition. London: J. & A. Churchill. 1885. Pp. 163.
28. Outlines of Infectious Diseases. By James W. Allan, M.B. London: J. & A. Churchill. 1886. Pp. 120.
29. The Pocket Pharmacopœia for 1885. By Armand Semple, B.A., M.B. Cantab. London: Baillière, Tindall & Cox. 1886. Pp. 192.
30. The Laws and Medicines of Circulation. By Wm. H. Triplett, M.D. New York: J. H. Vail & Co. 1886. 8vo, Pp. 510.
31. On the Suprapubic Operation of Opening the Bladder. By Sir Henry Thompson, F.R.C.S. London: J. & A. Churchill. 1886. Pp. 57.

Books, Pamphlets, and Periodicals Received—continued.

32. Handbook of the Diseases of the Nervous System. By James Ross, M.D., LL.D. London: J. & A. Churchill. 1885. 8vo, pp. 723.

33. Revista Argentina de Ciencias Médicas. Año II., Numero 12. Buenos Aires: Stiller and Laass. 1885.

34. A Guide to the Examination of the Nose. By E. Cresswell Baber, M.B. Lond. London: H. K. Lewis. 1886. 8vo, pp. 163.

35. A Guide to Therapeutics. By Robert Farquharson, M.P., M.D. Fourth Edition. London: Smith, Elder & Co. 1886. 8vo, pp. 394.

36. Elements of Practical Medicine. By Alfred H. Carter, M.D. Lond. Fourth Edition. London: H. K. Lewis. 1886. 8vo, pp. 443.

37. The Refraction of the Eye. By Gustavus Hartridge, F.R.C.S. Second Edition. London: J. & A. Churchill. 1886. 8vo, pp. 228.

38. Sore Throat. By Prosser James, M.D. Fifth Edition. London: J. & A. Churchill. 1886. 8vo, pp. 363.

39. Hospital Sisters and their Duties. By Eva C. E. Lückes. London: J. & A. Churchill. 1886. 8vo, pp. 164.

40. The Dental Cosmos. Vol. XXVIII. No. 2. February, 1886. Philadelphia.

41. Cases of Pericarditis treated with Salicylate of Sodium. By Samuel L. Abbott, M.D. Reprint. Pp. 16. 1886.

42. The Journal of the British Dental Association. Vol. VII., Nos. 1 and 2. London: J. and A. Churchill. 1886.

43. The Management of Labour. By Henry G. Landis, A.M., M.D. London: Charles Griffin & Co. 1886. 8vo, pp. 334.

44. The Optical Manual. By Surgeon-General T. Longmore, C.B. Third Edition. London: Her Majesty's Stationery Office. 1885. 8vo, pp. 184.

45. Zur Aetiologie der Skoliose. Von Dr. Felix Schenk. Berlin: H. Heinecke. 1885. Pp. 16.

46. Insomnia; and other Disorders of Sleep. By Henry M. Lyman, A.M., M.D. Chicago: W. T. Keener. 1885. 8vo, pp. 239.

47. Clinical Lectures on the Diseases of Women. By J. Matthews Duncan, M.D. Third Edition. London: J. & A. Churchill. 1886. 8vo, pp. 543.

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2. Handbook of Diseases of the Skin. Edited by H. VON ZIEMSEN, M.D. Illustrated with Eighty Wood Engravings and Colour Prints, - - - - -	255
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THE DUBLIN JOURNAL

OF

MEDICAL SCIENCE.

MARCH 1, 1886.

PART I.

ORIGINAL COMMUNICATIONS.

ART. X.—*On the Therapeutic Uses of the Digestive Ferments.**
By J. M. PURSER, M.D.

IF we may judge from the number of advertisements with which the journals are filled, and by the number of testimonials from chemists and practitioners which accompany these advertisements, there are few kinds of medicine more widely used at the present time than are the digestive ferments.

If we neglect the somewhat doubtful lactic acid ferment of the stomach, we know five digestive ferments:—1. A diastatic ferment found in the saliva and also in the pancreatic fluid; 2. A milk-curdling ferment found in the stomach and also in the pancreas; 3. A ferment which decomposes neutral fats, and which is found in the pancreas, and possibly in small quantity in the stomach; 4. A ferment which splits cane sugar into glycose and levulose, and which changes maltose into glycose—found only in the small intestine; and 5. A ferment, or, more properly, ferments, which convert proteid substances into peptone and other products. These ferments, which differ very much in their action, and in the conditions under which they act, are found in the stomach as pepsin, and in the pancreas as trypsin.

Now, as therapeutic agents there are some of these which we may eliminate, since their action is apparently unimportant for the process of digestion. We do not know why milk is curdled in the

* Read in the Medical Section of the Academy of Medicine in Ireland, Friday, January 29, 1886. [For the discussion on this paper, see page 274.]

stomach, and I believe rennet is never given as medicine. The decomposition of neutral fats undoubtedly takes place in the intestine, but we have every reason to believe that this occurs only to a very limited extent, and that the absorption of neutral fats is effected for the most part without their having undergone any chemical change. Moreover, the fat-decomposing ferment of the pancreas is the most delicate of all the ferments, and even if it could be separated and administered it would be immediately destroyed by the acid of the stomach, as it cannot resist the action of an acid medium.

Thirdly, the inversive ferment of the small intestine is not much used in medicine, and we do not know to what extent in normal digestion splitting of the sugars of the saccharose group takes place. We have thus remaining only two ferments—the diastatic and the proteolytic.

The diastatic ferment is given either as preparations of malt or as pancreatic extracts, and there is no doubt that many of these substances do contain a ferment which changes starch to dextrin and sugar. But what is the value of this? In the body the transformation of starch takes place in the mouth and for a short time in the stomach. Then the action is stopped by the increasing acidity of the gastric juice and the salivary diastase is destroyed, not merely suspended in its action. In the intestine the action is again resumed and completed by the more powerful diastatic ferment of the pancreas, and usually there is very little unchanged starch to be found in the fæces. Now when diastatic ferment is given by the mouth it can only supplement the action of the saliva, for, before it can reach the intestine, it is destroyed by the acid of the stomach. The action of the saliva on starch is far less important than that of the pancreas, and, while after a starchy meal much unchanged starch is always found in the stomach, scarcely any is to be found in the intestine. In many of the lower animals who eat their food raw the saliva has scarcely any digestive action, and the starch is digested altogether by the pancreas. Hence the useful effect of diastase given by the mouth must be insignificant, even supposing that the preparation is good, and that the ferment in question is wanting in the saliva. But is this ever the case? I do not remember ever to have heard of an instance in which the physician found this to be so before he prescribed maltin or pancreas preparations; and I believe that the absence of ptyalin from the secretion of the mouth will be found to be

one of the rarest circumstances. I must therefore conclude that as regards diastatic ferments their administration as such is useless and irrational.

We now come to the proteolytic ferments, which are in many respects the most important of all. First, as regards the pancreas ferment or trypsin—it is generally stated that this ferment is destroyed by acid of the strength of that of the gastric juice, and there can be no doubt that this is true of many pancreas extracts. This being so, it is evident that it is useless to administer trypsin as a drug, for its activity will be destroyed if it be given while the stomach is digesting and contains acid, while if it be given during fasting, when the stomach contents are not acid, it is incredible that it could pass through the stomach and lie in wait in the duodenum until the next meal is taken, and, having undergone stomach digestion, has passed through the pylorus.

I have, however, found the statement that the proteolytic ferment of the pancreas is destroyed by acid to be not invariably true. I have lately worked with an example of the liquor pancreaticus made by Mottershead of Manchester, a very active preparation. This is acid, but what the nature of the acid is I cannot say. The liquor has a vinous smell, and the acid is possibly only that of the wine with which the preparation seems to be made. I have found that when the liquor was mixed with about five times its bulk of 0·2 per cent. hydrochloric acid and kept for twenty-four hours at 100° F. in the water bath, then neutralised and added to 1 per cent. solution of carbonate of sodium, it dissolved fibrin readily, although not so rapidly as before acidification. This solution was not due to putrefaction, as it took place when thymol was added to the digestive mixture, and when this lay for many days in the water bath it developed no putrefactive smell. Another statement which has been made by Kühne I have been also unable to confirm. He says that in a mixture of pepsin and trypsin the latter is destroyed, while the former is uninjured, and he suggests that in the body the bile plays an important part in precipitating and killing the pepsin before it can reach the pancreatic fluid. In order to test this I mixed equal volumes of Mottershead's liquor pancreaticus and liquor pepticus together, carefully neutralised the mixture with sodium carbonate, and left it for twenty-four hours in the water bath at 100°–104° F. I then divided the mixture into two equal parts: to one I added 0·2 per cent. HCl, to the other 1 per cent. Na₂CO₃, and placed fibrin in each. The alkaline fluid digested the fibrin readily; the acid even

after several days showed no signs of digestion. Here it would appear that the pepsin was destroyed, not the trypsin. Although I have repeated these experiments with constant result, I cannot affirm more than that what I have described took place with the particular material with which I worked, and I do not wish to throw any doubt on the contrary results got by other observers. To what the discrepancy is due, must be a matter for further investigation.

Still, even admitting that trypsin is not absolutely destroyed in the stomach, I think there is but little encouragement for its administration as a drug. Mixed up with the acid chyme such part of it as escaped absorption in the stomach would be precipitated by the bile along with the pepsin when the contents of the stomach passed into the duodenum, and even if it were again dissolved it would be so enfeebled in its action as to be of little use in digestion. But beyond this, is there any evidence that this ferment is wanting in the pancreatic fluid? Has any attempt ever been made to show this, or is there any known way by which it may be determined? It is more than probable that so long as pancreatic fluid continues to flow into the intestine it contains trypsin in far better condition than this ferment would be after having undergone stomach digestion. I would therefore condemn the administration of trypsin as I have done that of diastase.

We finally come to pepsin, and here, if anywhere, we have the ferment whose administration rests on a scientific basis. This ferment is easily prepared and kept, as it keeps well in an acid solution which is not prone to decompose. It can be introduced into the stomach without having undergone injury by the action of any other gland, and we can time its administration so as to introduce it when it is required. Is its administration, then, founded on sound principles? I believe not. In the first place, pepsin is very rarely absent from the gastric secretion.^a I have repeatedly examined matters ejected from the stomach. They were sometimes alkaline, or foetid—on one occasion smelling strongly of ammonia, but always when they were filtered and acidified they digested fibrin or albumen readily. It is, therefore, not to the want of pepsin that the failure of stomach digestion is usually due, but to some failure in the conditions under which only the pepsin will act. I do not deny, however, that there are cases in which pepsin is absent, and

^a This is in accordance with the large experience of Dr. C. A. Ewald. *Berliner klinische Wochenschrift*. 1886. P. 51.

that it may be possible to effect an artificial digestion in the stomach, but is that an experiment which any chemist would like to undertake?

If the condition of the stomach is so seriously affected as to cause a cessation in the secretion of the pepsin, it is most likely that the viscus is not a very favourable receptacle in which to carry on an artificial digestion. The matters introduced are withdrawn from observation and removed from control; we have no power of keeping them from hurtful mixture or of regulating the conditions so that they may be favourable to the process. In short, it seems to me that the stomach is about the worst place possible in which to perform a prolonged and delicate chemical experiment. Since, then, pepsin is very rarely absent from the stomach, and since, even in those cases where it is wanting, the conditions for its action are not favourable, I think that pepsin, like the other ferments, should be banished from the list of drugs employed for administration as internal medicine.

In what I have said I have supposed that the ferments in question are genuine, and capable, under favourable circumstances, of producing their digestive actions on the different alimentary substances. The pepsin preparations are usually good. As I have said, it is easy to make a good stomach extract. Many of the diastatic and pancreatic preparations are utterly worthless, while others are very good.

I suppose, too, that the different ferments are given with some regard to common sense, and not all mixed together regardless of whether they are mutually antagonistic, or whether they act in acid or alkaline solution. But even so, and considered as a question of physiological chemistry, I hold that these substances are not suitable for internal administration.

Of course it will be urged that everyone has seen cases in which the use of these ferments has been attended with marked success. To this I answer—firstly, that the treatment is never confined to the administration of the ferments, but that dietary and other precautions are adopted, to which more than to the medicine the improvement of the patient is due. Secondly, the fact that a patient takes a drug and gets better is no proof that the drug is the direct cause of the improvement. How many patients are cured yearly by homœopathic globules in the thirtieth dilution? how many patients are relieved of the most severe symptoms by having bits of metal fastened on their limbs, by breathing through a solenoid, or

by being put to bed with a horseshoe magnet? and yet does anyone really believe that these cures are produced by the treatment directly, and not through the mental effect the impressiveness of the treatment produces. When a patient gets a bottle of one of the digestive ferments he finds around it a sheaf of testimonials from the most eminent practitioners, and on the label of the bottle is a farrago of nonsense, which passes with him for science. He is told how these ferments (which, as every physiologist knows, have never been isolated or weighed) are here combined in the exact proportions in which they are found in the stomach; that he has here the means of digesting everything that can be swallowed; that he has in his hands a "medical certainty" which will cure all the disease the human frame is liable to. Is it any wonder that he feels comforted both in mind and body? Besides, these drugs have a great advantage over many others—they can do no harm. As placebos, then, I do not object to them, but do not let the medical man suppose that he is walking in the paths of physiological science when he prescribes them.

Are the ferments, then, of no use to the physician? On the contrary I believe them to be of great utility. The attempt to perform an artificial digestion in the living stomach I have deprecated; but the artificial digestion of food in clean vessels outside the body and the administration of the digested material is a mode of treatment scientific in itself, and one which is attended with the very best results. Here we have no interference of one ferment with another; no uncertainty of whether the ferment will find in the body the suitable conditions for its action. The whole process is carried on under our eyes and in circumstances which are under our control. This use of the ferments inaugurated by Liebig, and so much extended in late years, chiefly through the labours of Sir William Roberts, is I believe the true one, and destined to replace altogether their internal administration as drugs.

ART. XI.—*A Case of Spina Bifida treated by Excision.*^a By THOMAS SINCLAIR, M.D., M.R.C.S. Eng.; Demonstrator of Anatomy, Queen's College, Belfast; Surgeon to the Ulster Hospital for Children and Women, Fisherwick Place, Belfast; Assistant-Surgeon, Belfast Royal Hospital, &c.

CASE.—A plump, healthy, female child, aged three months, was brought to the Ulster Hospital for Children, on September 18th, 1885, and was admitted by my colleague, Dr. Poole, on account of a small spina bifida. She was free from any other congenital deformity, such as talipes, harelip, hydrocephalus, &c. The patient presented a small lumbar spina bifida, about the size and shape of half an egg, which the mother asserted was increasing in size, being certainly twice as large as at the time of birth. The following points in the anatomy of the tumour could be made out, and the consideration of some of these, with the mother's wish to have it removed, encouraged me to operate upon it in the way described hereafter:—Opposite the last dorsal and upper lumbar vertebræ a thin, translucent pellicle, beautifully injected with an open meshwork of blood-vessels, enclosed about half an ounce of clear fluid. Peripherally, where it was continuous with the perfectly formed skin, the edge of the latter could be felt very distinctly, as if a circular piece the size of a crown had been punched out of the cutis vera. A ring of thick, long, pigmented hair surrounded the junction, but the pellicle itself was hairless. There was a dimple near the summit of the tumour, the cause of which was determined at the time of operation. The floor of the cavity could be felt fairly, owing to the comparative flaccidity of the tumour; it was firm and tolerably even, except in the middle line, where two irregular hard points could be distinguished about one quarter of an inch apart, presumably two laminæ of an incomplete vertebra approaching each other. The dimple alluded to above seemed connected with the interval between the laminæ by a strand of tissue traversing the cavity. No alteration occurred in tension when the child cried; no head symptoms could be produced by prolonged pressure on the tumour. There never had been convulsions, nor other nervous symptoms of a paralytic nature. It had never burst. Nothing like large nerve cords could be felt or seen in the tumour.

On September 19th I tapped the tumour with a fine trocar and cannula under antiseptic spray, and drew off less than half an ounce of clear fluid containing a considerable quantity of albumen. All the fluid came away from one puncture showing a unilocular condition. The puncture was sealed by a piece of lint soaked in tinct. benzoini comp., a graduated compress of lint applied over it and strapped on, a firm

^a Read before the Ulster Medical Society, on Wednesday, December 2, 1885.

flannel roller applied over all. No unpleasant symptom occurred at the time. The child was rather restless during the first night. Forty-eight hours later, on removing the dressing, I found the tumour refilled, notwithstanding the compression. It contained more fluid than when tapped. The refilling seemed to indicate that the communication with the spinal canal was not quite obliterated; that it could not be free, the absence of increased tension on crying appeared to prove.

On September 21st I decided to excise the pellicle and convert the whole into a granulating ulcer, by stimulating the punched out edge of the cutis and the adjacent part of the base by some caustic. In the absence of anæsthesia, but with antiseptic precautions, I rapidly cut round the junction of pellicle and skin, but found that the former would not come away on account of the strong fibrous cord attaching the dimple near the summit to the base. Confident that it contained no nervous matter I cut through it. It was tough and ligamentous, but contained the largest vessels I encountered. The base, now exposed, was firm and smooth, except where the two bony points could be felt. No patent canal leading to the spinal canal was visible between these laminae that was not completely filled by the stump of the strand of fibro-vascular tissue just described, and it did not appear prudent to probe between them lest some injury might be done. The bleeding stopped in a short time after holding lint, soaked in cold carbolic lotion, to the surface. The skin edges and the peripheral parts of the base were touched with nitrate of silver, a dressing of boric acid ointment covered by a piece of gutta-percha, rolled in lint and retained in position by strapping and a flannel roller.

No dangerous symptom occurred at or after the operation. The ulcer granulated kindly; later, exuberantly, and was dressed every alternate day with the ointment following a touch of the solid nitrate; the gutta-percha being retained till the last.

20th of October.—Within one month the healing was complete, and the patient was discharged. She has since been vaccinated and is thriving well.

Anatomy.—In studying the anatomy of a spina bifida it is well to consider the arachnoid, as divisible into anterior and posterior arachnoid, these terms being understood to mean the compartments in front of and behind the ligamentum denticulatum respectively.

The usual anatomy, according to Professor Humphry, of Cambridge, in a recent article in the *Journal of Anatomy and Physiology* for July, 1885, is “an accumulation of fluid in a cavity formed in the anterior subarachnoid, with all the structures posterior to it—viz., subarachnoid tissue, spinal cord and nerves, posterior

arachnoid membrane and cavity, dura mater, vertebral arches, subcutaneous and cutaneous tissues—stretched over it, and more or less imperfectly formed. It is evident from the above anatomical considerations that the failure of development upon which spina bifida depends must occur at an early period of foetal life—in most instances before the spinal cord has been segmented from the epiblastic, or epithelial, layer of the embryo from which it is developed.

“In some cases, however, the failure has occurred at a later period of foetal life, the segmentation and formative development of parts have taken place to a greater extent, and the skin, with its epithelium and the subcutaneous tissue, may have been formed in a natural manner all over the sac. This is most frequent in the neck.”

Again, Professor Humphry recognises that in some cases the segmentation and formation of the cord may be still more complete, so that it is found in the normal position on the bodies of the vertebræ. The dropsy in such cases, with the sac formed by it, is on the posterior aspect of the cord, the cord and nerves not passing into the sac. This condition is called by him “*hydrorachis externa posterior*.” The term “*hydrorachis externa anterior*” is applied to the more common variety, described previously. Both of these are to be distinguished from “*hydrorachis interna*,” in which the fluid accumulates in the central canal.

The fluid, in the majority of instances, is in the subarachnoid space in front of the cord. In some, however, it is in the arachnoid cavity in front of the cord, and then the sac is lined by the epithelium of the arachnoid. More rarely the fluid is found in the subarachnoid space or in the arachnoid cavity behind the cord. In these last cases the cord retains its normal position on the bodies of the vertebræ in the spinal canal; whereas, when the fluid is in front, whether arachnoidean or subarachnoidean, the cord and nerves are applied to, and probably blended with, the wall of the sac.

The anatomy of the tumour in my patient is peculiar in some respects, and probably warrants the placing of it in the rarer class of tumours, above alluded to, where the dropsy is in the compartment posterior to the cord.

Taking the central fibro-vascular strand, which traversed the cavity of the tumour as a pedicle, formed by the gradual approximation of the laminae of the imperfect vertebræ, and which, from its connection between the bony points at the base, appears to be justifiable; and, taking the cyst wall as formed of the spinal membranes,

which the open-meshed arrangement of blood-vessels appears equally to warrant, it remains to account for the connection of the strand with the summit of the tumour. This may have taken place in one of two ways :—

1st. An adhesion may have occurred at some period of pressure between the summit of the tumour and the throat of the pedicle—*i.e.*, the point where the pedicle passed between the ununited laminæ, thus leaving the sac of the tumour cut off from the arachnoid or subarachnoid cavity in the spinal canal—a condition which might also explain the absence of increased tension on crying.

2nd. The other explanation, which I think the less probable, may be offered:—A limited adhesion may have occurred at an early period between the parietal and visceral layers of arachnoid, at a point opposite the imperfect arch of the upper lumbar vertebra. Such adhesions are by no means uncommon in spina bifida cases, and are met with just below the lowest perfect vertebra, as described by Professor Humphry in some of his specimens. The subsequent distension of the arachnoid cavity with fluid, resulting in the protrusion backward through the imperfect arches of the dura mater and parietal arachnoid, would have the effect upon the visceral arachnoid of dragging it out of the spinal canal. The resistance of visceral arachnoid to this stretch would produce the very manifest dimple that existed at the summit of the tumour.

It is also possible that the later approximation of the laminæ so narrowed the basal part of the protrusion as to form a pedicle; and, had the patient come under observation some time later, the tumour might by that time have become completely detached from the spinal canal and its contents. As I found it, however, the throat of the pedicle had reached the stage of being blocked by the strand of visceral arachnoid. The two surfaces of arachnoid thus pressed into contact, adhered to each other at this part also, shutting off the cavity of the tumour from that in the spinal canal with which it was originally continuous. The difficulty in the way of accepting this second theory of formation is the presence of large blood-vessels in the strand of visceral arachnoid, seeing that this membrane has no proper vessels of its own.

Both theories as to the disposition of the parts show the cavity of the tumour to have been arachnoidean rather than subarachnoidean, and the fluid the over-secretion of the endothelium of that membrane. The fluid reproduced in the sac after my tapping was also of this nature, the albuminous character of the fluid pointing

strongly to the probability that the cavity was arachnoidean rather than subarachnoidean, for in subarachnoid fluid traces of albumen only, if any, exist. Mr. Holmes, in his "Surgical Diseases of Children," states—"Absence or even presence of a considerable quantity of albumen in the fluid is no proof that the tumour does not proceed from the spinal canal. In the latter case, however, it may be allowable to conjecture that its communication is with the arachnoid cavity, and that there is less probability of finding the cord in the sac."

Ætiology.—There are no facts in the history of this case tending to throw light upon the ætiology of spina bifida; nothing to enable us to decide between the two views held as to the origin of this condition—that is to say, whether spina bifida depends upon protrusion of the spinal membranes through a defect in the neural arches of the vertebræ, and in consequence of that defect; or whether the protrusion of the membranes, due to an intra-uterine arachnitis, is the cause of the defect in the arches. The child is a first-born, and gestation reached the full term. No accident happened to the mother during pregnancy.

Some interesting speculations have lately been published by Professor Cleland in the *Journal of Anatomy and Physiology*, as to the origin of spina bifida, anencephalus, &c., based upon the examination of a number of specimens of these deformities. He suggests that over-stimulation, at a very early period after conception, of the epiblastic elements—elements destined to form the cerebro-spinal axis—results in such an undue development of these parts, altering the usual shape and preventing the coming together of the medullary plates, by everting parts that ought to turn inwards. The over-stimulation is also expressed by a concurrent over-secretion of the epithelial cells, hence the dropsy. Over-stimulation is followed by a reactionary exhaustion, during which the development of the nerve-axis is suspended or delayed, and during which time it may undergo the atrophy and absorption of pressure produced by the fluid that itself secreted in the period of over-activity.

Treatment.—With respect to the treatment of spina bifida cases, most surgical writers, in warning against rashly interfering with them, emphasise, for the most part, those dangers immediately connected with the operation: the sudden fall of pressure in the central nervous organ, and consequent convulsions and death, or the occurrence of meningitis.

They draw attention to the frequent co-existence of congenital

hydrocephalus with congenital hydrorachis; but none of them suggest the possible *production* of hydrocephalus, in cases where it does not exist, by the spontaneous or artificial cure of a spina bifida.

Dr. E. Long Fox—in the *Bristol Medico-Chirurgical Journal* for March, 1885—has placed on record a case of spontaneous cure of spina bifida, *followed*, in some months, by hydrocephalus. In Dr. Fox's case, however, the central canal of the spinal cord was imperfectly closed, and the fluid which flowed during the first four months of life came from this central canal, as proved by the accumulation of nine pints in the cerebral ventricles subsequent to the closure of the open canal in the cord. There was a malformation in the lower part of the cord itself in his case, as verified by *post mortem* examination, which interfered with nature's efforts at spontaneous cure—in other words, this case was one of "hydrorachis interna."

As a prognosis is nearly all a surgeon can offer to many spina bifida patients, Dr. Fox's observations may, with advantage, be borne in mind. No symptoms of such a sequel have appeared in my patient up to the present; but, indeed, in this case one would scarcely anticipate such a result. It is now three months since the performance of the operation, and the patient is doing well.

ART. XII.—*The Poor Law Medical Charities System of Ireland.*^a

By ARCHIBALD HAMILTON JACOB, M.D., F.R.C.S.I.; Ophthalmic Surgeon, Richmond Hospital; Professor of Ophthalmic Surgery, Royal College of Surgeons in Ireland.

GENTLEMEN,—This time last year, Dr. John William Moore, whose then position as Chairman of this Sub-section I have the honour to occupy this evening, addressed you on the subject of "Sanitary Organisation in Ireland in its Medical Aspect," and laid before you a lucid narrative of the causes which produced the breakdown of the Public Health System in Ireland, and the disastrous result of that breakdown upon the health and lives of the people, and upon the prosperity of the country. I believe that I can scarcely occupy your time this evening to greater advantage than to supplement Dr. Moore's observations, by submitting to you a sketch of the Poor Law Medical Service of our country, and by offering for your consideration a few suggestions for its improvement in detail. I feel that as I have never held office myself, as

^a An Inaugural Address delivered before the Sub-section of State Medicine of the Academy of Medicine in Ireland, Thursday, February 4, 1886.

either a dispensary or workhouse medical officer, I am more or less open to the complaint that I am intruding as an amateur into the arena more fittingly occupied by those who have acquired personal experience of the working of the Medical Charities System. But I venture to plead that as I have, for the last twenty years, been, in some sense, the depository of the confidences of my brethren who administer that system, I may claim to have thus acquired a knowledge of the minutiae of the system, and of its weak points, which knowledge I may advantageously make use of to inculcate reforms.

The working of the Poor Law Medical Charities System in Ireland, is indeed a subject well deserving of the attention of this Sub-section of the Academy; for it occupies the closest relation to the welfare of the most helpless portion of the population of Ireland, and to the prosperity and producing power of the country, and, moreover, affects the closest interests of the greater number of our own profession throughout the country.

Including in the designation of "Poor Law Medical Charities," the Workhouse Medical Relief System, I find that it affords medical aid annually to over 840,000 persons. or nearly one-fifth of the entire population of the island; of whom over 640,000 may be described as sick when brought within the scope of the system. But in addition to the relief of the indigent sick, which is their special function, the Poor Law Medical Officers of Ireland have the medical charge of the Constabulary, numbering at present 12,938; their families, numbering, on a calculation of two persons to each family, nearly 26,000; and the Coast Guards, numbering about 1,500. Furthermore, the vaccination of 117,484 children and adults, calculating the average of three years, 1881-3, is effected annually by them. And lastly, they examine and certify about 1,200 dangerous lunatics.

So far I have enumerated the medical and curative functions which Poor Law Medical Officers discharge for the public; but they have other duties of scarcely less importance, which, of necessity, bring them into intimate communication with the population, under conditions which enable them to exercise most valuable influences upon the welfare of the people. In the registration of an annual average of 126,014 births, they are brought into contact with the people at the moment when their advice and aid may yield the most valuable result upon the health of the community. In their function of Registrars of the 96,552 deaths which occur in

Ireland in each year, they become directly and immediately cognisant of the perturbations of the public health throughout the country, and the invasions of epidemic and infective disease, and are enabled to grapple with these enemies to public prosperity at the instant when a resistance to such hostile influences may be most effectually undertaken. Lastly, in being called upon to register an annual average of 23,375 marriages, they acquire a personal knowledge of the domestic life of the people, and often are accepted as their confidential advisers, not only in matters of health, but in the other affairs of life.

Their duties as Medical Officers of Health—which have been the subject of the address of my predecessor—would be, if they were permitted by the Local Government Board and by the Union Guardians to perform them efficiently, amongst their most important functions, although they do not permit of being included in the foregoing classification, because, in their capacity of Medical Sanitary Officers, they are responsible for the detection and annihilation of every nidus of disease, and are responsible to advise the people as to the maintenance of their domestic health, and, if necessary, to enforce protective measures.

Finally, the examination and certification of young persons employed in factories—though not within their jurisdiction as Poor Law Officers—is, in most instances, performed by them, and is of sufficient public importance.

These figures I may present in a more intelligible form in the following table, which sets forth the numbers of the Irish population ministered to annually by the Poor Law Medical Charities Service:—

Admitted to workhouses, sick	-	-	53,105
Attended on Medical Relief tickets	-	-	588,553
Total sick	-	-	641,658
Healthy when admitted to workhouses	-	-	200,237
Total under Poor Law Medical			
Charity	-	-	841,895
Constabulary and Families, say	-	-	38,814
Coast Guards, say	-	-	1,500
Total population in Medical charge			
of the Poor Law Service	-	-	882,209
Or 17·7 per cent. of the entire population.			

ADDITIONAL DUTIES—

Vaccinations	-	-	-	117,484
Birth Registrations	-	-	-	126,014
Death do.	-	-	-	96,552
Marriage do.	-	-	-	23,375
Certification of Lunatics	-	-	-	1,200
Total	-	-	-	364,625

Thus it appears that the Poor Law Medical Charities Service of Ireland passes through its hands, in its proper medical or curative capacity, in the course of the year, nearly one million persons, or one-fifth of the entire population; and, in addition, is called upon to intervene in 365,000 separate occasions, by which the health, prosperity, and good order of the people is most closely influenced. Thus, allowing for the re-counting of persons who come more than once in the year within the scope of the system, I am entitled to assert the fact, that a million and a half persons, or one in three, of the entire population pass through the hands of the Irish Medical Charities system in the course of each year.

To view the extent and importance of the service, from another point of view, we may regard the amount of public money which is expended for the maintenance of the health and prosperity of Ireland through the agency of the Poor Law Medical Service. In this connection I may shortly recapitulate as follows the items of yearly expenditure for which the dispensary and workhouse medical officers were most directly responsible, in the year 1884:—

Dispensary and Vaccination Services,	-	£158,363
Registration of Births and Deaths,	-	10,954
Sanitation,	-	58,844
Salaries, &c., of Workhouse Medical Officers,		8,935
Medicines, Medical Appliances, and Sick		
Nurses, say	-	10,000
Superannuations,	-	8,364
Total,	-	£255,460

Furthermore, the Poor Law Medical Service is very widely distributed and is numerically very extensive, and forms unquestionably the most important section of our profession in Ireland. Its numerical strength at present is as follows:—

Workhouse Medical Officers and Apothecaries,	-	202
Dispensary Medical Officers and Apothecaries,	-	849
Midwives,	- - - -	296
		<hr/>
		1,347

I find, from an examination of the "Irish Medical Directory," that the members of the medical profession resident at any one time in Ireland number about 2,200; but, allowing deductions for those who have retired from practice or who (being connected with the army, naval, or commercial services) are peripatetic, I calculate that the actual working members of the profession do not exceed 1,800. If, therefore, 1,051 of these (as above shown) are connected with the Poor Law Medical Service, I will not be accused of unduly exalting their importance in speaking of them, as I have done, as "unquestionably the most important section of our profession;" and having before me the figures above quoted, I do not hesitate to go further than this in asserting that the Poor Law medical officers of Ireland are incomparably the most important public servants of the community, and that their functions are of immeasurable value as exercising the most direct and lasting influence upon the prosperity and happiness of the Irish people.

I apprehend that these facts are scarcely appreciated either by the people themselves or by our rulers either in Parliament, the Irish Government, the Local Government Board, or the Boards of Guardians; for the enactment of the medical poor law and its administration seem to be conducted in the most haphazard and perfunctory manner. The Poor Law Medical system is liable at any moment to be disturbed by legislative changes and authoritative rules, to which neither Members of Parliament nor any one else give due thought. New duties are thrust upon the service without inquiry or serious thought as to its fitness for the charge; they are expected to perform these duties without any approach to adequate instruction on the subject and without any effort to organise, and they are called upon to discharge these new functions under the guidance and control of Guardians who are themselves absolutely ignorant of their own powers and responsibilities in the matter, and totally uninstructed on the method of carrying the law into effect.

I need only point to the history of the enactment and enforcement of the Labourers Dwellings Act of 1884 as an illustration of my meaning. A Bill, conceived in the last month of the session,

was rushed through both Houses, without even a pretence of revision, at the moment when half the M.P.'s had gone off to the grouse shooting, and the remainder were utterly *blasé* of legislative work. It was to come into operation in the following winter, and three months was given to the Guardians to take action under it; yet, when the winter arrived, the minds of both the Guardians and their officers were an absolute blank on the subject. A condition of chaos, which would be ludicrous if its effects were not so disastrous, was the result—every mistake was committed which ignorance of the business could beget—the clauses of the Act were infringed by every Board of Guardians which attempted to make use of it; and the result has been universal wrangling, costly litigation, the break-down of the Labourers Dwellings system, and numerous past, present, and future attempts to tinker-up the Act.

The Irish Poor Law Medical Officer is presumably a gentleman of culture and competent skill, for not only must he possess the diplomas in Medicine and Surgery which are required for the Army and Naval Services, but he must also be specially qualified in Midwifery, and these imply an amount of general education and culture which pass muster. He is appointed—if a Workhouse Officer—by the Guardians, under the 31st section of the Poor Relief Act of 1838 (1 and 2 Vict., cap. 56); if a Dispensary Officer—by the Dispensary Committee, under the 8th section of the Medical Charities Act of 1851 (14 and 15 Vict., cap. 68). In the case of the Workhouse Officer the Local Government Board is required by the first quoted section to “direct the mode of the appointment, and determine the continuance in office or dismissal of such officer,” and by their own rule (Art. 39), made under authority of that section, they order that—“Every Officer appointed to or holding any office . . . shall, . . . subject to the provisions of Article 40, continue to hold the same until he die, resign, or be removed by the Local Government Board.” This power of removal of Officers by the Local Government Board is defined by the 33rd section of the Poor Relief Act, which says:—“The Commissioners may . . . either upon or without any suggestion or complaint in that behalf from the Guardians, . . . remove any paid officer appointed under the provisions of this Act whom they shall deem unfit for or incompetent to discharge the duties of any such office, or who shall at any time refuse or neglect to obey and carry into effect any of the orders of the Commissioners.”

The Dispensary Medical Officer holds his office subject to the one brief proviso in the 8th section of the "Medical Charities Act," that "it shall be lawful for the said Commissioners to remove any such medical officer on sufficient grounds." No further provision exists.

The question of the appointment and tenure of Poor Law Officers raises the great question of their status as public servants, and is worthy of the deepest consideration. From the law as I have quoted it above it is obvious that the original intention was that while the local authorities, being the paymasters, ought to please themselves as to the officer whom they might select to serve them; that officer, when appointed, should be essentially a civil servant, holding his position during good behaviour and independently of the local authority.

It seems to have been fully understood by the law-makers of that day that the residents of a district, who were taxed for the maintenance of the doctor, had every just right to select the officer who was to serve them as long as that officer was fully competent for his duties; but it was also fully understood that such officer could not efficiently discharge his onerous and often invidious functions unless he were placed under the immediate protection of a central authority and in a position of safety and independence as regards his tenure of office.

I regret to say that these wise principles and opinions have to a great extent fallen into disuse, and that the service is in danger of becoming the menial servant of the local authorities, wholly dependent on their caprices for daily bread, unprotected in the discharge of its duties, and therefore necessarily subservient and inefficient in all matters in which those duties touch the personal interests of Guardians and Committee-men. In the first place, the power of appointing the officers, which is confided to the local authorities, is, in very many instances, so exercised that the most competent officer is not necessarily selected, for it is notorious that in almost all parts of Ireland politico-religious qualifications rule the elections, while scientific attainments, experience, personal qualities, or social culture, weigh but little in the selection of a candidate.

It is, no doubt, reasonable that the taxpayers of a district should lean towards a competitor with whose religion and politics they are in sympathy, but that consideration should never be allowed to overshadow the interests of the sick poor, or to cause an officer of inferior capacity to be placed in charge of them; and yet it

is notorious, that frequently the professional merit of the candidate is put completely out of sight, and political influence is substituted to such an extent, that it is not very unusual to see elections conducted in the presence of riotous political mobs, under the loaded rifles of the police, and amidst all the intimidation of a contested parliamentary election. Such a state of things cannot fail to react disastrously, and I think it has so reacted, upon the status of the Poor Law Medical Service, and against the interest of the sick poor, and yet it is difficult to suggest a remedy. It has frequently been suggested that the entry to the service should be by competition, and that officers should be promoted from one district to another by their seniority as a *roster*, but I cannot look upon such a proposition as just, even in theory, inasmuch as it would deprive the residents of a district of all voice in the selection of their medical attendant, while it is obvious that the tide of public opinion at present is directly against such a centralising scheme, and in favour of concentrating in the local authority an almost uncontrolled discretion as to the administration of its district.

While, however, I recognise the unwisdom of any undue interference with that discretion—even though it may be somewhat abused—I regret to observe that the Local Government Board has displayed in the matter of Poor Law appointments the same indifference and the same desire to escape responsibility by which its administrative policy has always been characterised, for I have never known of an instance in which its influence has been exercised to secure fairness of election or appointment by professional merit. It would have been open to that Board, I think, to put a stop to political intimidation, when that intimidation went the length of obstructing and coercing the voters and maltreating the unpopular candidate; and, I think, they would have been quite justified in refusing their sanction to elections so conducted, but on no single occasion have they ventured even to advise the electors, still less to protect the voters, or secure the freedom of their choice.

The remuneration of the Poor Law Medical Officer must, I think, always be governed, in the greatest degree, by the ordinary principles of demand and supply, for though I am aware that Guardians and Dispensary Committee-men are often impelled under pressure of the local taxpayers to select their officer from the “cheap and nasty” grade of the profession, yet I do not think that, on the whole, the interests of the sick poor have been materially prejudiced by this very natural leaning towards economy.

In fact, in most districts the amount of the official emoluments is not the chief factor which decides the class of doctor to whom the district is to be entrusted; much more important considerations are the extent and value of the private practice obtainable, the nature and geographical position of the district, and the chance of agreeable social intercourse therein. A poor district, sparsely inhabited by indigent tenant-farmers, and far distant from a large town or from a railway station, must be content with the ministrations of such a medical officer as will be content to live in it, and who will compensate for the absence of practice by a little farming; and it would be neither possible nor desirable to urge the local authorities to pay their doctor anything more than the minimum for which a duly qualified practitioner can be obtained; nor would the addition of a few pounds to his salary purchase the services of any medical officer whose attainments and tastes enabled him to live elsewhere.

I have, therefore, always discouraged agitations for the raising of salaries; and I recognise the fact that neither the Local Government Board nor any other supervising authority ought to dictate to the Guardians on this question. But it is, nevertheless, clearly the duty of that Board—and I am glad to say they have hitherto been firm on the subject—to protect the officer against capricious and malicious reductions in his salary when once fixed; for if it were permitted to the Guardians to deprive him of a portion of his means of livelihood whenever the economic shoe pinched them, or whenever they saw fit to punish him for some offence against duty or political creed, it is obvious that the emoluments of the Poor Law Medical Officer would come to be so precarious, that appointments would cease to be an object of competition.

But, as I have said, the value of a Poor Law medical appointment, and the quality of the doctor who seeks it, are dependent chiefly on the value of the private practice obtainable in the district; and this brings me to the discussion of the cause which influences that value in different localities. As you are all aware, the dispensary doctor is required by the 9th section of the Medical Charities Act, and by the 21st article of the Regulations made thereunder, to “duly and punctually attend, either at the dispensary during the appointed hours for attendance thereat, or at the house of the party on whose behalf application is made, or elsewhere, as the case may require, and supply all requisite medical and surgical advice and assistance to every *poor* person in the district or division of a district under his charge, whom he shall be required to attend as medical officer,

by a ticket, signed by a member of the committee of management of the dispensary district, or by a relieving officer or warden, acting for any electoral division included in such district; and shall continue his attendance until such attendance is no longer required, or until the ticket be cancelled."

This law was made in the year 1851, shortly after the famine, and at a time when it was peremptorily necessary to provide for the medical care of the poor in the widest sense; but within the thirty-four years which have since passed, though the condition of the Irish people has completely changed, the law has remained unaltered either by the voice of Parliament or by the authority of the Local Government Board. That Board has steadily refused to define the word "poor;" has permitted (I might almost say encouraged) the irregular issue of medical relief tickets to persons who could not pretend to be poor in any true sense; and has, in every way, lent its official toleration to the wholesale abuse of the system. As a natural consequence, the Poor Law medical relief system of Ireland has become wholly demoralised—a large section of the population, who in any other country in the world would never dream of seeking medical charity, have quartered themselves upon the taxpayer, and, unblushingly, demand gratuitous medical advice and medicine. To such an extent has this demoralisation extended in Ireland that in many districts the small farmer, petty shopkeeper, or well-to-do artisan, stands aghast at any suggestion that he should pay for doctors or medicine; and in some districts, which are by no means amongst the poorest, practically the entire population claim to be regarded as paupers *quâ* medical attendance.

I need scarcely remind you that such a malversation of medical charity does not exist in any country under the sun. In England, Wales, and Scotland, no one is entitled to medical poor relief unless he is a pauper; and it is the duty of the relieving officer—who alone is authorised to issue medical relief tickets—to satisfy himself that the recipient is actually destitute before he issues it. No artisan who is well enough to work is regarded as a poor person. In Ireland, on the other hand, medical relief tickets may be issued by any one of, say, ten committee-men and wardens, and very generally no inquiry is made as to the capacity of the recipient to pay. If any consideration at all is given to that question, the issuer proceeds on the principle that no one should be called upon to pay for medical advice and medicine unless he has loose money for the purpose over and above all his other requirements; and, in fact, if

it seems that an applicant spends his daily earnings on either necessities or luxuries, he is granted a medical poor relief ticket as a matter of course. It is no uncommon proceeding for the committeeman to sponge his own family on medical charity; and, in doing so, it never occurs to him that there is anything unlawful or opprobrious in doing so, for, by long experience, he has been taught to believe that the services of the dispensary doctor are included in his taxes, and that he is as much entitled to use those services as to use the roads which he helps to pay for.

If such person hesitates at all about issuing a ticket, he does so because of personal friendship for the doctor and a desire to spare him trouble.

I do not appeal against these abuses in the interest of the doctors, for, in the long run, it does not make much difference to the profession at large how the system is worked. It is manifest that some one must pay them for their services, and that the sum they receive must be enough to live on. If they derive a considerable income from private practice they can afford to accept a lower salary from the Guardians, but if they are excluded from private practice by the operation of these abuses they must either insist upon a larger salary or else seek their fortune in a more lucrative locality. Thus in districts where these abuses are rampant, the taxpayers have to pay inordinately high salaries, and find the greatest difficulty in obtaining or retaining efficient officers, and I have in my mind's eye certain places in which, for this reason, no medical officer remains for more than a few months. Furthermore, the taxpayer is called upon to pay for the medicines and medical appliances supplied to well-to-do people, and, as a result, the expenditure on these items throughout Ireland is out of all proportion to the amounts paid in other countries for a similar population.

The abuse of Poor Law medical relief has been fostered by one or two flaws in the law, and, as I have said, by the indifference of the central authority—the Local Government Board. I have already complained that no attempt has been made to define a “poor” person, such definition being the more necessary because the medical officer cannot be permitted to make such a definition for himself. I fully concur in the view that the dispensary doctor should be divested of all discretion in the matter, and that he should be, as he is, bound to attend on the ticket no matter by whom it is presented, but I look upon it as monstrous that the supervising authority should tolerate the indiscriminate issue of tickets as they do. Under

their *regime* the book of dispensary tickets has, in many districts, come to be an important part of the stock-in-trade of the local shop-keeper, who, in order to be in a position to oblige his customers, obtains appointment as a committee-man or warden, and, having obtained his book of tickets, signs his name at the bottom of each and hands them over to his shop-assistant for issue to every customer who desires one. The order of the Local Government Board is that "the ticket and counterpart are both to be filled up by the person authorised to issue" it, the purpose of such direction being obviously that the issuer may satisfy himself that the recipient is deserving; but the Local Government Board has allowed this rule to become a dead letter, and has even, when called upon to give an opinion upon this system, refused to discourage it in any way. It is a question open to legal dispute whether a ticket, not filled up by the issuer, is binding on the medical officer; but, practically, that officer is obliged to honour it because of the difficulty of proving that it was issued by deputy, and because of the risk of censure or dismissal if he refused to comply with the order.

These abuses of Poor Law medical relief are also facilitated and encouraged by the fact that the remedy which the law places at the disposal of the medical officer is, in all respects, unsatisfactory. If he should feel aggrieved by the improper issue of a ticket, his only redress is to seek to have it cancelled, for which purpose he must resort to the dispensary committee—where he is confronted with the member who is in fault and by his friends—it may be, perhaps, several weeks before the meeting of the committee takes place, and, meanwhile, he must continue attendance on the patient whose case, probably, will be disposed of long before the redress sought for can be achieved. If he thinks it worth his while to press for the cancelling of the ticket, the committee, desiring not to condemn their fellow-member, may probably decide that the ticket was rightfully issued; but, if favourable, they may cancel it, in which case the committee-man who issued it may revenge himself by at once issuing another ticket for the same patient, upon which the medical officer is still bound to attend. Thus great injustice and hardship may be inflicted on the medical officer even by inadvertence, but those hardships are multiplied tenfold where the wholesale issue of tickets is—as it often is—made use of by a malicious member of the committee to persecute a medical officer to whom, for political, religious, or personal reasons, he may be hostile. It is quite open to him in such case—and the instances are not rare in which it has been done—to

render the doctor's life miserable and to destroy his professional prospects by maliciously serving him with visiting tickets. I have known cases, and I have one under notice at the present time, in which the hostile committee-man has hunted the country for persons to whom to issue tickets, has designedly kept the presentation of those tickets back until a time when it is most harassing on the doctor to attend on them, and has made it a rule to give visiting tickets for long journeys to patients suffering from the most insignificant maladies.

To remedy these abuses and counteract these faults in the law, the Irish Medical Association has done much. In the first place, it has taught the committee-men that if they negligently or wilfully issue tickets to persons who have no right to them, they may themselves be sued for the doctor's fees, and made to pay; secondly, it has taught the person who asks for a ticket, without being entitled to it, that he may be punished for the false pretence by being compelled to pay. Upon these points the Association has obtained legal decisions, and has thus put the weapon of defence into the hands of the medical officer, but it is not yet clearly established whether the cancelling of the ticket is a necessary preliminary to the suit, and, as it has been assumed to be so, the medical officer remains, in most instances, helpless until some means is found of speedily cancelling improperly issued tickets. A method of doing this, which seems both reasonable and practical, was embodied some years ago by the Irish Medical Association in a bill introduced on their behalf by Mr. Meldon, then M.P. It proposed to give to the magistrates at petty sessions a power to cancel tickets on good cause shown, while still reserving the same power to the dispensary committee. This clause has not been pressed, nor do the present circumstances encourage the Association to submit it again for the approval of Parliament, but I think it an admirable proposal. As the petty sessions meet, as a rule, once or twice weekly, an appeal to the magistrates might be taken at the beginning of one attendance, and the appeal tribunal would be quite independent in its judgment, while it would be in a position to adjudicate upon the merits of the dispute with a certain amount of personal knowledge.

It seems to me that if such a check were placed upon the committee-man, warden, and patient, very few of the existing abuses would survive, and the interests of the sick poor and of the taxpayer would be greatly served.

The outcry of the Poor Law medical officers against these abuses

has been met by the statement that there is no abuse; that the tenant farmers, petty shopkeepers, and artisans, if not actually "poor" persons are relatively "poor," because they are quite unable to pay the guinea which is the recognised doctor's fee; that it is, therefore, the medical officers' own fault if, by keeping their fees above a practicable amount, they force the committee-men to issue a ticket to every one who cannot afford to pay the guinea. This answer to our complaint is enforced by pointing out that in England, Wales, and Scotland, none but the destitute are beyond the reach of private medical advice and medicine, which may be obtained from fully qualified and reputable practitioners through the agency of clubs and provident dispensaries for a payment of a few pence weekly or a few shillings a visit.

The Irish Poor Law medical officers are told to "go and do likewise."

Now, in the first place, it is quite untrue that the Irish Poor Law medical officer either demands or receives a guinea a visit, or that his ministrations are, on the whole, anything more costly than those of his Saxon brother. It is true that some of the seniors in the service adhere to the symmetrical guinea as their recognised *honorarium*, payable at a first attendance on the patient, but the repetition of that fee is entirely dependent on the monetary capacity of the payer. Having, as they consider, preserved their self-respect by receiving the fee which recognises their status as gentlemen and educated physicians, they are quite willing to give any quantity of gratuitous attendance which the patient has any right to expect, and I believe I am correct in saying that the whole amount which they receive for each private patient is much less than that which the same patient, if resident in England, would have to pay either in club subscriptions or private fees for the same services. I assert, without fear of contradiction, that in any case which requires several visits the Irish patient is enabled, without resorting to the relief ticket, to obtain medical advice upon much easier terms than in England, even though he may have, at the first visit, to pay his guinea to the doctor.

But then there are the patients who could pay a few pence weekly (if they would) or a half-crown at each visit, but who are so indigent or improvident as not to possess a guinea at the moment when the doctor's services are required, and it cannot be denied that these are left unprovided for by the guinea-fee system, and are, of necessity, thrown upon the medical charity as "so-called poor

persons," and I think, therefore, that some relaxation of the recognised *honorarium* ought to be made.

It is obvious that to attempt by etiquette or understanding to impose strictly on the practitioner any fee or scale of fees would be not only unbusiness-like and impracticable but unwise and unreasonable, and therefore the attempts occasionally made by Boards of Guardians to pledge the medical officer to accept a fixed small fee are the stupid outcome of ignorance of the ordinary principles of political economy. Not only the necessities of the patient and his capacity to pay the doctor vary in all degrees, but the value of the doctor's skill and time are equally unfixable. Many Poor Law medical officers are well worth their guinea fee, and are so over-employed that their time would be underpaid by any smaller sum; while others, perhaps, would be considered by their patients to be dear at half-a-crown. It is, therefore, impossible to fix a minimal fee; but, on the other hand, it is time, I think, that the attempt to fix a maximum by any rule of medical etiquette should be abandoned. I hold that every practitioner should be permitted to assess the value of his own services without being banned thereby as having fallen from medical virtue.

As a matter of fact, I believe a majority of the Poor Law medical officers of Ireland have taken the matter into their own hands, and, while they maintain the theory that their proper fee is a guinea, they are quite prepared to accept half or quarter that sum without saying anything about it; but there are many others who feel themselves bound by medical propriety to adhere to the fee which their ancestors required, and I think it fair and reasonable, in the interests of the sick poor and of the profession, that those practitioners who wish to adjust their fees to the needs of their clients should be by some means released from this supposed obligation. With this object I suggest that the Irish Medical Association, or some other professional organisation of equal influence, should adopt and formally promulgate a resolution to the effect that a medical practitioner receiving such fee as the circumstances of his patient enabled him to pay should not be considered to have infringed professional propriety.

But though I contend for the right and propriety under the circumstances of each practitioner fixing his own fee, I recognise the necessity for establishing, as far as possible, a uniformity of action in the matter amongst Poor Law medical officers, and with this view I think it would be very desirable if a scale of fees could be suggested. Such scale should be clearly defined to be a minimum,

inasmuch as the right of the practitioner to exceed it to any extent he pleased ought to be fully declared; and I do not see any fairer basis upon which such a scale could be constructed than the valuation of the patient's residence. Such a tariff of fees has been in use for years in many parts of England, and it has, I believe, been found to work satisfactorily, but it may be that in the construction of such a scale for the Irish provinces the distance travelled by the doctor in his visit to the patient should be taken into account.

It seems to me the voluntary adoption of such a tariff in any district would do much to neutralise the abuse of medical charity relief therein without any change in the existing law. It would be open to the medical officer to supply to the committee-men or wardens a book of "recommendations," which would serve not as an *order* to the doctor, but as a recommendation to him to give the holder the benefit of the reduced scale of fees. It would be thus open to the committee-man, when importuned for a medical relief ticket by an undeserving applicant, to afford him that relief without burthening the doctor with gratuitous work or mulcting the rate-payers for cost of medicines, and I think it would be found to be the interest of the medical officer to encourage the committee-man to substitute these recommendations for the official medical relief ticket by allowing the issuer a considerable discretion as to their issue.

THE POWER TO DISMISS THE POOR LAW MEDICAL OFFICERS.

The question which now most fiercely burns in the Poor Law medical world is the tenure of office of the workhouse and dispensary medical officer. In the case of the dispensary officer, as I have already pointed out, the only law on the subject which exists is that which enables the Local Government Board to dismiss an officer "on sufficient cause." Heretofore that power has been exercised rarely and in cases where there was obviously good reason, so that no occasion has arisen to take a legal decision as to what constitutes "sufficient cause;" but I think it may be taken as the law that a dispensary medical officer holds his appointment until some circumstances arise which a jury would consider to justify the Local Government Board in dismissing him. It is possible that the question may come to be discussed whether the hostility of a majority of the dispensary committee, either on political, religious, or personal grounds, could be regarded by the Local Government Board as "sufficient cause," and if such dispute arises I have no doubt that the Irish Medical Association will see the propriety of asserting,

on the part of the dispensary officers, the principle that, as long as they are competent and willing for the efficient discharge of their duties, their tenure of office is permanent.

In the case of the workhouse medical officer the question of tenure of office is now ripe for settlement, and will be actually under argument in the High Court of Justice within a day or two. The right of the guardians to dismiss an officer was first broached in 1881, in the case of Dr. O'Reilly, of Lismore, whom the Local Government Board encouraged the Guardians to dismiss. They were met by the Irish Medical Association with the challenge that if the Guardians took any such course an action would be at once instituted by them on Dr. O'Reilly's behalf, because, by law, the dismissal power is vested in the Local Government Board, and cannot be transferred to the Guardians by any other means than a new Act of Parliament. When the case was ripe for contest, Dr. O'Reilly, against the advice of the Association, threw up the sponge and resigned his office, and since then the Association has been watching for the opportunity which now presents itself to settle the dispute.

In 1881 both the law and their own regulations were clearly against the Local Government Board in their effort to shift the dismissal responsibility to Guardians, but, with the view of mending the law, and to give legal effect to their views, that Board promulgated, on the 18th of December, 1882, a new general order for the administration of unions. By the pre-existing rule the Guardians might "suspend" an officer pending the approval of the Local Government Board. If that Board did *not* approve, they might restore the officer to office, otherwise they must take the responsibility of dismissing him themselves. By the new rule the Board try to relieve themselves of this responsibility, for they decree that, if they do not remove the suspension, then the Guardians may dismiss him. There is, fortunately for the Poor Law officers, one flaw in this nice little scheme to throw them on the tender mercies of local political agitators. The Local Government Board has no more power to make such rules than to dictate orders to the Lord Chancellor. The Act of Parliament distinctly invalidates any or every attempt to shift the responsibility of dismissal of its officers from that Board to any person or body whatever. There is but one Act of Parliament which governs the matter; it runs thus:—

"It shall be lawful for the Commissioners . . . to direct the Guardians . . . to appoint such paid officers as the Commissioners shall think necessary . . . and the Commissioners

may . . . *direct the mode of the appointment and determine the continuance in office or the dismissal of such officers*, and the amount and nature of the security, &c. . . .”

It will be noted that under this section the Commissioners, and no one else, are to “*determine the continuance in office or the dismissal of such officers.*” These words of themselves might be considered sufficiently explicit, but they are confirmed by the phraseology of the 33rd section, and by the Order originally made by the Commissioners themselves, and now, with singular inconsistency, reiterated. The 33rd section says:—

“The Commissioners may, *either upon or without any suggestion or complaint on that behalf from the Guardians of any Union to remove any paid officer . . . whom they shall deem unfit for or incompetent to discharge the duties of any such office.*”

It is here set down, one would think, sufficiently clearly that the Local Government Board are the persons to dismiss, and that the Guardians have no power in the matter save to offer “*suggestions or complaint,*” to which the Board may or may not give effect; and it is to be noted that the officer is liable to dismissal only upon incompetency or unfitness, or for refusal to obey *the orders of the Commissioners*—it being clearly the intent of Parliament that the officer should not be open to removal because of declining to fulfil the Guardians’ orders, or to conform to their personal caprice, and that he should be, to that extent, independent in the discharge of his duties.

Neither in this clause, nor in any other part of any Act of Parliament that I can find, is there any power whatever given to the Board to delegate dismissal powers to any person or body; and, indeed, such delegation is contrary to the whole spirit of Irish Poor Law legislation. The Local Government Board themselves interpreted the law in this sense, for, acting upon the authority of the law which we have quoted, they have made the following rule:—

“ARTICLE 39.—Every officer . . . holding any office under this Order shall . . . continue to hold the same until he die, or resign, *or be removed by the Local Government Board*, and every porter or assistant may be dismissed by the Board of Guardians without the consent of the Local Government Board.”

It will be noted that herein a marked distinction is drawn between those menial servants which the Guardians might dismiss, and those higher officers which the Local Government Board alone was entitled to deal with; and nothing can be clearer than that that Board, and they alone, have power to remove the higher officers.

The Irish Medical Association has taken the highest legal advice on the point, and has received from Mr. Purcell, Q.C., the advice—"That the Local Government Board have no power to delegate to Boards of Guardians any authority to dismiss or suspend the medical officer of the Union, and that the general orders to this effect in the Articles 39 and 40 of their recent circular are *ultra vires* and illegal."

The Irish Local Government Board has been referred to the sections of the Act of Parliament, as above quoted, and it seeks refuge in the third section of the same Act, which says that—

"The Commissioners are authorised . . . to make and issue orders for the government of workhouses . . . and for the guidance and control, appointment and removal of the officers thereof, and for guidance and control, *according to the intentions of this Act*, of all guardians, wardens, and other officers."

The Board appears to hold the opinion that this section gives them power to authorise Boards of Guardians to dismiss officers, in which view not only I, but much higher legal authority, entirely disagree. The Board may, under this clause, make any rules it pleases, "according to the intentions of the Act;" but it has no power to make any decree which goes in the smallest tittle against or beyond the words of the law.

The only legal precedents bearing upon the question are the cases of Dr. Kenny, of the North Dublin Union, and of one M'Gwiggan, an assistant schoolmaster. Dr. Kenny, it may be recollected, was dismissed by the Local Government Board for a political offence, and he sought to compel them to reinstate him, on the ground that that Board had no authority to "deem" him "unfit" unless for some cause conversant with the discharge of his medical duties. The case was argued in the Rolls Court, but before the judgment was delivered the Local Government Board submitted and reinstated him in office. In this case, therefore, no question arose as to the power of the Guardians to dismiss, and the only question which did arise—*i.e.*, the limits within which the Local Government Board had dismissal power, was not decided.

More recently, the right of the Guardians, under the new rules, to dismiss was raised in the case of an assistant schoolmaster at Belfast, named M'Gwiggan. The cause of dismissal was not in dispute, but the right of the Guardians; and, in order to prevent the establishment of an adverse legal precedent, which might afterwards operate against the medical officers, the Irish Medical Association thought it necessary to intervene.

The case was argued in December, 1885, in the Queen's Bench, on behalf of the Association by Mr. John Gibson, Q.C., afterwards Solicitor-General for Ireland, and Mr. Monroe, Q.C., who was then Solicitor-General, and is now the Judge of the Land Court.

The judgment delivered by Judge O'Brien, on behalf of Chief Justice May, and Mr. Justice Johnston, would be incomprehensible to most of our readers, but I quote the important phrases:—

“As to certain principal officers, such as masters and doctors, the Local Government Board have an absolute power of dismissal on any grounds that they consider sufficient, so that, as to them, there can be no contract implied.” . . . The common sense of the matter would seem to be to regard Boards of Guardians as a kind of artificial body for carrying out public functions governed and controlled in all their functions by the rules made concerning them.

“They are to appoint officers, but subject to the approval of the Commissioners. The latter are to make rules for the guidance, control, and removal of officers. Under section 31 they may direct the mode of appointment and determine the continuance in office and removal of such officers. Under section 33 they may themselves remove any officer whom they deem unfit or incompetent.

“The Guardians may suspend certain officers, but they are to report the cause of the suspension. They have absolutely no power of dismissal except as to the porter and assistants (to whom are added, in the English rule, nurse and servants—additions which indicate still more decidedly the precarious nature of the employment).”

ART. XIII.—*Goître in the Himalayas.* By BRIGADE-SURGEON
WILLIAM CURRAN, A.M.S., Retired.

THE existence of goître on the higher table-lands of Central Asia was first made known to us by Marco Polo. Describing the “Province of Yarcán,” he says that “a large proportion (of its inhabitants) have swollen legs and great crops at the throat, which arises from some quality in their drinking water.” Mir Izzat Ullah and Mr. Shaw confirm this; and he and other members of the expeditions that accompanied or followed him were overwhelmed with applications for remedies containing iodine by sufferers from this disorder. Mr. Schuyler adds, that goître also

prevails in Khokand and Kashgar;^a and we learn from Dr. Hooker that it is very common "amongst the Tibetans, Bhotanese, and other inhabitants of the Nepal Terai." A diffusion so wide suggests a glance at its surroundings, and these may help to throw some light on its genesis and history.

Of its existence, and that, too, on a very large scale, within our own Himalayan territories there can be no doubt. The most careless or casual visitor to our hill stations must have seen scores of such cases; but it is certainly more common in some parts than in others, though why this should be so is not always apparent. It occurs at all ages and in almost equal proportions between Hindus and Mahometans, men and women, thus showing that its cause, whatever that may be, is no respecter of persons. It is rarely prominent, however, in either sex before the age of puberty, and its growth thereafterward is slow and painless. It is nowhere regarded, so far as we could ascertain, as either a disqualification for matrimony or even a deformity. Anyhow, the subjects of it whom we examined appeared to make light of it, and they rarely, we believe, seek relief from it at the hands of either their own or European doctors.

Of its prevalence nearer home we are equally certain, though one would look in vain through Yorkshire, Derbyshire, or the valleys of Wales for anything like the "crops" here referred to; and it is frequently associated with cretinism in Italy and the Tyrol. The city of Aosta may, indeed, be regarded as its head-quarters; and it is in the valley that bears its name that, to use the words of Mr. Whymper, "these distorted mindless beings, more like brutes than men," called cretins, "most do congregate." Nothing of this, however, occurs in the Himalayas; on the contrary, their denizens are a hardy, well-developed race; and as to cretinism, pure and simple, it is conspicuous by its absence. Idiocy, however, is rather common in the interior of these hills; and one meets occasionally, in the remoter valleys, with a class of creatures who, for want of a better or more scientific designation, might be called

^a As this gentleman's testimony is very pertinent to our issue, I reproduce it here in full and will then leave it to speak for itself. Describing the city of Khokand, he says (*Turkestan*, Vol. II., page 15) that, "I was greatly struck with the prevalence of goitre, and it seemed to me as if every third merchant was afflicted with this disagreeable malady. Whether it has anything to do with the use of snow-water I cannot say, but the streams flowing through the city are formed by the melting of distant glaciers, and this was the only town in which I noticed this disease. I am told, however, that it is very prevalent in Kashgar and Yarkand."

"born fools." But the Himalayas are by no means peculiar in this respect, for there are, unhappily, examples in large numbers of that description of persons elsewhere, and it would be well for society and themselves that they were equally harmless.

Why this peculiar swelling or hypertrophy should manifest itself exclusively in this particular organ is not known; neither, indeed, is the function of this so-called *thyroid body* clearly understood.^a All we can say about it is that it is a soft, reddish, and highly-vascular structure, which forms a rounded projection on either side of the windpipe and larynx, and appears to protect these and also the great vessels of the neck as they emerge from the chest. But other swellings and diseases, such as cancer, tubercle, &c., are equally exclusive in their seizures; and, as in the one instance so in the other, glandular enlargements or degenerations are everywhere the heritage of poverty and want. Nor is this heritage confined to man—it is shared in also by his "fellow-mortals," the dog and other domestic animals; and it is often amusing to watch these creatures sluggishly moving about with "great crops at their throats," such as the famous Venetian traveller noticed elsewhere long ago.

Various causes have been assigned for its causation, such as locality, heredity, a poor monotonous vegetable diet, close stuffy valleys, and the habitual use of snow-water, or of water largely impregnated with lime. This latter is the cause to which the people themselves chiefly ascribe it, so that we need not discuss the others in any detail here. And as to the use of snow-water, goître prevails in countries, such as Sumatra and South America, in which this water is scarcely ever seen, while it is almost unknown in Greenland and Lapland, where no other is at times available. Though willing enough to exhibit their crops to the curious traveller, the inhabitants of these hills rarely apply for treatment at his hands; and the only remedy they resort to is the old familiar moxa or tinder, which they burn over the tumour, and through which they sometimes succeed in diminishing its bulk, though they do not thereby entirely remove the deformity or subdue the disease.

As this moxa is regarded everywhere in the East, but especially

^a The recent experiments of Mr. Victor Horsley, of the Brown Institute, would seem to imply or establish an importance in the economy for this gland which was hitherto denied it. But the details are too technical for reproduction here, and the writer is only concerned with the popular side of the question.

so in the regions here referred to, as a panacea for all the ills that flesh is heir to, including amongst them this deformity, a few words on its mode of application and uses will not, we believe, be regarded as irrelevant or out of place here. It has been employed from time immemorial in these hills for pains of every description, and the people resort to it with a faith which no failure can chill and no discouragement or remonstrance can restrain. Infants but a few days old, if they appear to be in any way uneasy, are at once severely cauterised over their stomachs, and no bad effects are found to follow from this offhanded procedure. Veterans on the verge of the grave are similarly dealt with, and both appear to thrive under the infliction. The general way of applying it is to rub the part with a handful of cold wood-ashes and then strike it repeatedly with a piece of red-hot iron like Fig. 1. This produces dots or depressions like those indicated in Fig. 2, but the marks that are left by these repeated blows are, at least, twice as large as those given; and when this appliance is not at hand, another and even more painful method is resorted to. This is nothing more or less than putting a piece of lighted tinder on the part and allowing this to consume itself away. Though these remedies are certainly severe, no attempt is made to modify or evade them, and the eagerness with which they are resorted to on all domestic occasions would seem to imply that they are found effectual.

The Puhari doctors are of course wise enough to know that the rough method used some days or hours previously on the father in the fields would be quite unsuited for his infant offspring in the cradle. They discard accordingly the primitive-looking implement referred to above, and substitute instead of it an eyed, seton-like piece of metal, such as is sketched at Fig. 3. With this they produce some such blots or blotches as are represented in Fig 4, and it is no uncommon thing to see infants or children streaked in this way in this region literally "from the soles of their feet to the crowns of their heads." Nor is this procedure peculiar to this quarter. It is known or practised, in one form or another, over all the hilly ranges of the world. Its application is as common in Central Africa as it is in Central America, in Arabia as it is in Orissa, among the Philippine and Pacific islanders as among the wild tribes of the Rocky Mountains or the wilder inhabitants of the coast of Labrador. It has been used with benefit, so the patients acknowledged, in such widely different diseases as cholera and snake-bite, inflammatory fever and guinea-worm, and we ought

Fig. 1.



Fig. 2.

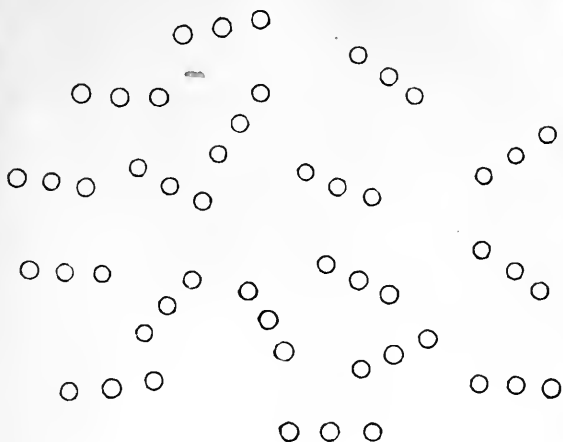
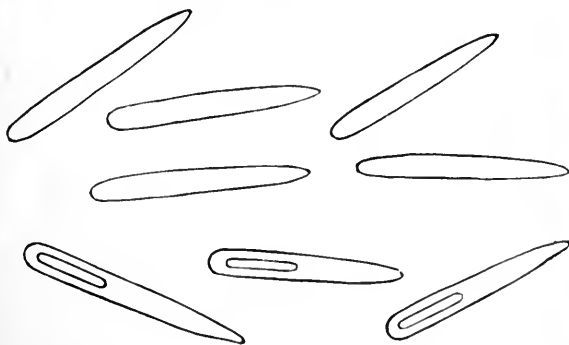


Fig. 3.



Fig. 4.



not therefore be surprised at hearing that it has frequently dispersed a voluminous goître. But the therapy of this swelling was not included in our original conception of the scope of this essay, and so we need not encumber these pages with any further reference to this feature of our case.

The fact mentioned by Dr. Livingstone, that drinking the water of Tanganyika proved a perfect cure in a few days to many of the goïtrous slaves whom he met in that neighbourhood, seems to imply that peculiarities of the soil or water supply of the district whence they came had something to say to it. The natives of the Himalayas are so convinced of this that they often change their abodes, but they cannot so easily change the hereditary predisposition their progenitors impressed upon them, and their food remains, unfortunately, always the same. This consists, in ninety-nine cases out of every hundred, of one or two small varieties of grain, which they call *Moorheea*, and which is simply a mixture of *Penicillaria spicata* and *Holcus sorghum*—in other words, of the bulrush millet and great millet. This is made up into a mess with some green vegetable, or seasoned with red pepper, and fried on a pan like the Scotch cake; and if we throw in a little milk and clarified butter, when these can be obtained, we have before us, in all its monotony, the cuisine of the Puhari, or hillman of the Himalayas.

Whether the vicious habit of breeding in-and-in, which is so common in these hills, has any influence on its production, and, if so, how much, we cannot say. These primitive people do not understand such questions, or, if they do, they are unwilling to speak about them; and it should never be forgotten in this connection, that goïtres are not regarded as a blemish in these hills, or a disqualification for any of the courtesies or amenities of social life. "In France, Italy, and Switzerland, it is a positive advantage," says Mr. Whymper, "to be goïtred, as it secures exemption from military service; and it is," he adds, "an unquestionable fact that the perpetuation of the great goïtrous family is assisted by this very circumstance." This is putting a price on deformity with a vengeance. But such is really the case—a goître is worth so much in hard cash in those regions in which the conscription obtains; and, describing a similar state of things in the Tyrol, the authoress of "German Home Life" adds, that "the fact of the goïtrous marrying the goïtrous, gazing upon the goïtrous, and living in a goïtrous atmosphere from time immemorial, has more

to do with the production of this hideous throat disease than the presence of dolomite rocks, snow-water, or the other remote causes assigned for it by science."

The unavoidable suppression—on account of the costliness of their reproduction as illustrations—of the five photographs with which this paper was accompanied, and some of which were obtained with difficulty in the interior, imposes on me the necessity of saying something about them as well as about the subject with which this essay is chiefly concerned.

Two of the photographs were taken in Kumaon, near Nynce Tal, and the remainder were secured at Mussoorie or in the adjacent hills. They represent two brothers, who were either coolies, cultivators, or shikaris as opportunity offered or occasion required; and two of the others represent a mother and daughter, who were charcoal-burners in the Teree Rajah's territory, near this latter station. The fifth was an imbecile old Hindu who lived on his son's bounty—and all are typical illustrations of the condition they are intended to portray. The former were healthy, vigorous, young men, of the middle height, who carried my cot, tent, &c., without a murmur over passes which I could scarcely get through with difficulty, and both laughed heartily at an avowed apprehension of mine that this deformity might interfere with their prospects in the matrimonial market. They assured me that they could get as many wives as they could maintain, and this excrescence did not "bar," they said, their or their neighbours' prospects in this or any other walk. A very similar feeling pervaded the other sections of this community I came across, and the Horatian maxim "*Nil admirari*" would form an appropriate motto for any or such symbol, device, or standard as the future ruler of their territory may set up.

Touching the old Hindu and his hebetude, I noticed several others in a similar condition, and there can, I think, be no doubt but that, though this condition produces no appreciable ill effects on the health of its owners in early life, it does so unmistakably as old age approaches, and I saw one or more illustrations of this at Gangoutree, near the source of the sacred Ganges. The old women who have been born with enlarged thyroids would pass without any preparation for Macbeth's witches; more hideous hags are not to be found on the surface of this gnarled globe. They all sternly refused my polite request for a "sitting," but I could easily see that they were not comfortable, and I should opine that these hard and stony masses would ultimately interfere with, if

they did not actually arrest, the functions of the trachea and the œsophagus, but I had no proof of this. Many, indeed, had already attained to extreme age, and I saw only one case in which this petrified mass had so far encroached on the chest as to *appear* to be eating away the clavicle and sternum. That it must also interfere in time with the nutrition of the brain by obstructing the flow of blood to it from the heart can scarcely be doubted, and this would be my explanation of the mental incapacity or decay that is so often noticed in connection with this condition in advanced life.

As regards the ætiology of the complaint I have not much to say. Most of those I conversed with assured me that they were born with it. “Cub se shuru hua?”—“When did it begin?”—I used to say to them, and their almost invariable answer to this interrogatory was “Paida hua, sahib,” or shorter, “Paidaish se, sahib”—“From my birth, sir;” and there is no doubt in my mind but that heredity plays a large part in its propagation and genesis. So do, I am convinced, breeding in-and-in, and the defects (nutritional or otherwise) engendered by these are enhanced by their poor surroundings and the poorer monotonous vegetable dietary already referred to. Millet constitutes, as I said before, the basis of their food, and though this may be of kin with that *Revalenta Arabica* of which we hear so much, it only consists, according to the late Dr. Edward Smith (“Foods,” p. 162) in a 100 parts—of water, 13; nitrogenous, 13; carbonaceous, 74; fat, 2·6; and salts, 2·3. Johnstone, or rather his editor, Church, describes (“The Chemistry of Common Life,” p. 222) a beer that is made out of this seed by fermentation by the Kaffirs as “a sort of spirituous gruel of a very fattening quality” but these poor people are not fat—quite the contrary—and they know nothing of “fermentation.”

Their beverage is “pure element” from the neighbouring brook or rill, and though this often comes from a distant glacier, or is even largely impregnated with lime, I do not think that it has much to do with the diffusion or genesis of this disorder. I say this, however, guardedly, and in face of the fact that many of the sufferers from it are otherwise minded, so indeed are many medical men, and some of the facts already disclosed within would seem to point in the same direction. But other facts are equally cogent in the other way, and there can be no doubt as to the purity of the source or the quality of the supply with which these poor people

are so abundantly, and withal so gratuitously, provided.^a We must therefore, I think, look elsewhere than to this substance for a key to the interpretation of the phenomena that precede or accompany this disease, and this key will, I think, be best found in an exhaustive analysis or judicious combination of the other cases enumerated above.

ART. XIV.—*Experimental Researches upon Tuberculosis and Scrofula.* By EDWIN WOOTON.

[Continued from page 47.]

THE assertions made by certain eminent scientists that tuberculosis and pneumonia are due to certain lower definite forms of life—that is, are invariably of a specific septic character, has, I am sorry to say, met with a very general acquiescence without sufficient research or consideration.

That septic material taken from a tubercular subject and cultivated, may, by its injection into another animal's body, produce tuberculosis, proves nothing beyond the fact I have demonstrated, and apparently not grasped by the advocates of the specific septic character of tubercle, that any septic matters finding their way into the lymphatics will cause lymphatic inflammation, and, therefore, set up tuberculosis to a greater or lesser extent.

The asserted specific microbe of pneumonia has no more connection with this disease than any other form of life. Pneumonia can be produced, as shown already, by any of the septic forms, or by any other means of irritation.

A logical fallacy runs throughout the whole of the arguments of Koch and similar thinkers on this subject of septicism. It is assumed that because a particular thing can produce a disease, the disease is invariably caused by that thing; whereas, the conclusion can be relied on as accurate only when every attempt to produce the disease by other means has failed; and, since I have by experimental work proved that tuberculosis and pneumonia may be brought about by any irritant to the lymphatic system, the pseudo-microbes

^a The weight-on-head-carrying theory I purposely exclude from this list, for that best of all reasons that I do not believe in it, for though this mode of conveyance is very common in these hills, infants at the least cannot be turned to account in this direction; and I fancy that were we all to take to walking on our heads instead of as now on our feet, we should not even then become affected in this way without the aid of the other accessories mentioned within.

of tuberculosis and pneumonia resume their true position as merely accidental forms in a common state of septicism.

III.—THE THERAPEUTICS OF TUBERCULOSIS AND SCROFULA.

Of the so-called “systems of treatment” and “infallible specifics” for pulmonary phthisis that have, from time to time, occupied the attention of the profession, I have tested a large number in the laboratory and have found that those having any beneficial influence on the disease consist, in every case, of one or more means acting on one or more of the pathological processes involved, and never on the whole of such processes. Hence, while all such systems and remedies have proved efficacious in certain cases, in others they have totally failed to cure; this is due to the facts that the pathological processes of tuberculosis vary greatly in intensity in different subjects, that many of them obtain only at certain stages of the disease, and that when they obtain throughout, or in more than one stage, they do not exert an uniform influence during the whole period of their subsistence. These considerations are applicable not merely to brutes but to the human subject. To instance their truth:—Iodine has been lauded as a specific and failed; its action is that of an absorbent; at the commencement of tubercular disease, therefore, it is a rational medicine, but the later processes are but slightly affected by it. Tar water, another “specific,” is a valuable antiseptic, and consequently of service when septicism obtains, but altogether useless under other conditions. Tartar emetic lessens the blood-supply to the lungs by depressing the circulation, but this vaunted curative agent is of service only when a pulmonary lesion has involved blood-vessels of size, giving rise to hæmoptysis. Salts, both phosphates and hypophosphites, cod-liver oil, and other nutritive medicines, while affording material for lung tissue, cicatricial growth, and nervous energy, are totally useless to suppress septicism, and any treatment of this kind becomes a battle between normal cellular growth and septic irritation, the tendency of the latter being towards suppuration.

The “antiseptic system” is really curative of one only of the pathological processes, and if the subject be not in the stage when this obtains, the phthisis will proceed unchecked. It is to be remembered that, although septicism nearly always occurs before death, it is not essential to a fatal result.

Electricity again, most valuable as a physiological stimulant, provides no food, and is not antiseptic.

These examples will show how partial and incomplete has been the treatment of tubercular consumption, for every agent mentioned has in turn served as a "specific."

Medical skill is nothing but the logical application of facts, and the difference between the oft-styled cleverness of one practitioner and the stupidity of another—for the laity express their minds pretty freely concerning the profession—is the exact equivalent of the difference in the logical accuracy with which the knowledge of the respective "doctors" has been applied.

Placing on one side those engaged in research and the practice of special departments of the profession, there is not nearly sufficient difference in the extent of the knowledge possessed by practitioners to account for the marked contrasts in the success of their several treatments. Not infrequently the balance of knowledge between some two is so placed as to render the case apparently anachronistic—that is, the less learned practitioner is the more successful. I have known a medical student, whose acquaintance with *materia medica*, therapeutics, and medicine would certainly have failed to pass him at any examining board, treat severe and complicated diseases with far better results than the very men who were his teachers at the hospital. Moreover, his prescriptions were original. The whole explanation is—his mind was logical, and he applied logic to the facts set forth in his text-books.

In the cases of tuberculosis and scrofula we have, on the one hand, a series of connected pathological processes; and, on the other, a series of agencies by which these processes are capable of being controlled.

If, then, we understand the right relationship to each other of these pathological facts, and can determine when they obtain in the body, we should be able by the use of these agencies to bring about the physiological states constituting health.

This is not a mere logical theory, but a fact demonstrable both in the laboratory and at the bedside.

For the moment ignoring the facts these researches have revealed, and taking orthodox pathology and therapeutics as they were in 1864, 1874, or 1884, we are brought face to face with a sufficiency of information theoretically to yield results far more successful than those social and medical history would teach us have been obtained.

Whence, then, the failure?

Examine any leading orthodox work on medicine of the dates given and you will find therein valuable prescriptions and directions

for treatment, but without accurate and definite instructions as to the particular pathological stages in which they will prove efficacious. Moreover, when the pathology is dealt with therapeutically, the advice given does not cover the whole of the bodily processes involved.

Very frequently the instructions grossly violate pathological indications. Thus it has been taught: "If the patient does not progress under the influence of iodine, try inhalations of tar." "Iron has, in some cases, proved beneficial." "As to climate, some do well in a dry, others in a moist atmosphere." "A case is reported in the *Lancet*, of such a date, in which great benefit was obtained from * * *." "Dr. So-and-so has had successful results with this or that," &c., &c., *ad nauseam*.

Here the treatment has been altogether worse than empirical, for the knowledge of facts possessed has not been applied in a logical manner to the conditions to be remedied.

It is sufficiently distressing to find medical scientists attempting to remove one of many connected processes obtaining at the same time, and very often choosing the more proximate on which to operate, as if a successful result in the case of any one such process would of necessity produce a cure of the disease. But it is worse by far when we find that absorbents, antiseptics, tonics, and other descriptions of therapeutic means are tried one by one, as if their applicability to the condition of the patient could be tested only by experiment.

There is, perhaps, one thing yet more sickening, to which I will only allude—the flaccid helplessness of the teacher who looks from the patient to the cemetery gates and moans—We have no possible means of cure, and can, therefore, only endeavour to postpone the fatal issue by doing our best to support the strength and treating symptoms.

From the records of cases that have come into my hands I have found large numbers of patients to have undergone a treatment consisting of particulars altogether misplaced. Tar water, when there was no septicism; tartar emetic, when the blood pressure was low; iodine and sea air in the far advanced stage, when no amount of absorption could possibly effect a cure.

Every one of these agencies used in its proper place would have been of service, but, misplaced, the results have always been worse than *nil*.

It should ever be borne in mind that there is no chance work

either in pathology or the therapeutical action of drugs of certain composition or nature. Differences in susceptibility exist—that is, dosology is not an exact science, but the action of every drug is constant for every human being, and, so far as research has extended, for every inferior mammal. Thus, iodine is always an absorbent, and, although insusceptibility to its influence may be very marked, its action can be obtained by enlarged doses.

I might illustrate the historical treatment of phthisis by likening the disease to a hostile army occupying a conquered country, and the resources of medical science to the army of that country. What would be said of any general of the defensive forces who, instead of bringing all available means to bear on the foe where they would be most effective with the object of rendering the artillery power of the other useless, the cavalry powerless, and the infantry incapable of maintaining their position—in short, by military skill and prowess overmastering his enemy—should try first his artillery, then, when it had failed to achieve aught, his cavalry, and next his infantry, and should use them, moreover, without regard for their fitness for the task assigned them!

Ridiculous as a cavalry charge against the walls of a fort may appear, it is not more absurd than the application of therapeutic agencies in the history of even recent medical science.

While the therapeutic battle has raged fiercely on the field of pulmonary phthisis, tabes mesenterica and tubercular meningitis have been comparatively free from warfare. In plain language, medical scientists appear to have agreed that aught approaching a cure in either disease was not to be looked for.

It may be admitted that while the pathology of tuberculosis was unknown, it was not in the power of medical men to effect the absolute removal of either condition; but, certainly, the logical application of known therapeutic agents would have relieved the diseases named of their severity, and prolonged life.

I am justified in coming to this conclusion by the results yielded by laboratory experiments on living animals, as well as by the effects produced in the human subject by therapeutic means used merely in accordance with the pathological knowledge of the past.

It having been seen that the pathological conditions in both diseases are incompatible with the due fulfilment of one or more of the body's functions, the first indication is the removal of these states for others approaching as nearly as may be to the normal.

There are certain first or general therapeutical principles applicable to the two diseases, and deducible directly from a knowledge of their pathology. The practicability of any measures based thereon is determinable only by the therapeutic means at command, and dependent, therefore, on experimental tests concerning the latter's value.

These principles are:—

1. Removal of constitutional condition by general measures.
2. Removal of local affections by general measures.
3. Removal of local affections by local measures.

It is evident that absorption secured in tuberculosis, and nutrition in scrofula, would, theoretically, result in the removal of the ensuing processes. But not only does direct action on the factor processes aid the result aimed at, but action at the primary source alone frequently fails, owing to fatal results being brought about by the diseases before the measures adopted have had time to accomplish their intended work.

All vital action, whether physiological or pathological, is essentially nervous in character—that is, conducted through the nervous system. Hence all such action can be affected by operating on the nervous centres. A perfectly healthy nervous system must result in perfect health wherever that system extends.

But here, again, laboratory experiments teach us that valuable and important as such central action is, we cannot, owing to its slowness of operation, afford to rely on it alone, and dispense with more local remedies.

But medical science has seldom erred on this side. Indeed, one of the gravest charges that can be brought against therapeutists is that they have persistently refused to see the dependence local health had on that of the nervous system. The treatment of all disease has been, generally speaking, in my opinion, far too local in character.

It will have been seen that scrofula and tuberculosis are two conditions involving a series of identical processes, the individual factors, however, not coinciding each for each—scrofula commencing with malnutrition, and tuberculosis with impaired absorption.

Bearing in mind the further facts with which we have become acquainted, the physiological processes we have to seek to bring about are, therefore—

In tuberculosis—Absorption in intestines and tissues, prevention of congestion, nutrition, prevention and cure of septicism.

In scrofula—Nutrition, digestion, renal action, absorption.

Every one of these physiological processes is obtainable by the action, in each case, of a particular class of agents.

We know the nature of the disease. We know the bodily and other processes which will remove it. And lastly, we know the agents which will bring about each of these processes.

Our task is, therefore, merely to apply these agents rightly, and to do this we must understand in general:—

1. How these processes best affect the diseased system—singly or in combination.
 2. The physiological channel by which each process is best affected—singly and in combination.
 3. The known agents affecting each physiological channel.
 4. The comparative efficacy of their single and combined action.
- And we must understand in each particular case—
5. The pathological conditions obtaining.

Individual remedies may be found of far greater power than many of those I have employed, and which, on account of variations from the latter in their character, may necessitate other methods of application; but if my pathology be true, the therapeutical principles I have laid down are of necessity true also, and it is only in accordance with those principles that agencies of whatever nature can be efficaciously employed.

The space at my disposal is so limited that I purpose omitting the minute details recorded in my MS. notes, and giving only a summary of the results obtained and their consequent indications. I am the more free to do this, as the accuracy of the statements can be tested by any medical scientist.

The experiments in connection with the therapeutics of tuberculosis and scrofula were undertaken with the object of finding the effect on the diseases in their various stages of each of various classes of agents, and of the latter in various combinations. Theoretical considerations were entirely put on one side, and no conclusions formed until the termination of the various tests. The results obtained were, however, entirely in harmony with the indications to be derived from a logical consideration of known facts, pathological, physiological, and therapeutical.

It was never within my view to test the action of untried drugs. Rather was it my object to master the correct application of those known to us. It is but of scanty service to humanity to add to our list of resources when we have means at command whose power has been proven, but is misapplied through lack of method.

The following table exhibits in, I trust, a lucid manner the scientific treatment of tuberculosis:—

Form of Disease	Physiological Process indicated	Channels by which Process may be brought about	Class of Agents by which effected
TUBERCULOSIS in all its forms	Absorption in tissues and intestines	Internal stimulation of lymphatics Local stimulation of lymphatics Internal stimulation of nervous centres Local stimulation of tissues Nutrition of nervous centres, organs, and parts	Internal absorbents External local absorbents Electric, thermal, frictional, and medicinal stimuli, exter. Internal stimulants and tonics Electric, thermal, frictional, and medicinal stimuli, exter. Foods, medicinal and dietetic
	Nutrition -	The processes bringing about absorption result in this	Do.
	Repression of septicism	Absorption and nutrition Free antiseptics in blood Antiseptic inhalation -	As above Medicinal antiseptics internally Atomised and vaporised antiseptics
	Prevention of congestion	Free surface circulation Nutrition	As for nutrition—external stimuli —
	Relief of congestion	Relaxation of surface vessels Cardiac action - - Contraction of vessel walls	Rubefacient applications—med., thermal, and frictional Stimuli, general and cardiac Stimuli and tonics
PULMONARY TUBERCULOSIS only	Arrest of hæmorrhage	Contraction of vessel mouths and coagulation of blood Lessened cardiac action	Astringents internally and by inhalation Depressants
	Lessened expectoration when excessive	Nutrition - - - Contraction of vessels -	Which see Astringents by inhalation
	Freeing mucus from bronchi	Increase in contractile power of bronchi	As for nutrition—stimulating medicinal expectorants, electric and frictional stimuli
	Freeing mucus from bronchi when latter are clogged and there is danger of collapse	Enlargement of calibre of bronchi by relaxation to permit passage of air behind clot, followed by Increase in contractile power	Laxative expectorants As above

Again, while it has been sought to compare with each other in each of various classes of drugs the more important of their respective members, it was never for one moment designed to form anything like a complete list of remedies. The great end in view has been the proof by experiment as to the classes of agents that will bring about the desired physiological processes, and the modes of application by which this can be best effected.

It may be argued that analogy cannot be made to point from a known process or fact in a brute's body to a concluded like condition in the human subject. As all physiological and pathological knowledge is in favour of a true analogy holding, I might leave the oft-repeated falsehood to its fate; but I desire to point out that these researches deal, save incidentally, only with the brute creation, and I therefore urge hospital pathologists and physicians to test by all practical means at their disposal the extent to which the observations I have recorded hold good in the human subject.

All the therapeutical experiments I have undertaken have, without exception, combined to lead me to the conclusion that the tuberculous condition is most rapidly removed when all the physiological processes negating those of a pathological nature which obtain are set in action simultaneously—that is, the processes act best in combination. It is therefore necessary to combine only agents which do not exert on one another a neutralising action.

THE VALUE OF CERTAIN KNOWN AGENTS.

Class 1. *Absorbents*—There are in the British Pharmacopœia only two drugs the preparations of which promote directly the process of absorption to any appreciable extent—Mercury and Iodine.

The most powerful preparation of mercury for inunction is the red iodide, next to this the green iodide, and third on the list may be placed the perchloride.

In all forms of tuberculosis where marked local symptoms are present, local inunction is of service. In general tuberculosis without local symptoms the seat of inunction should be the abdomen.

For fumigation the most powerful forms of the remedy are the metal and its two iodides. The subchloride is comparatively weak in action.

When taken by the mouth, the most powerful preparations of mercury are those advised for inunction.

The facility with which the drugs act on the system through the channels named is in the order—mouth, inunction, fumigation.

When these channels are combined the absorbent effect of the mercury is more readily obtained than by any one such channel alone. Nor is this due solely or mainly to the increased quantity of the material employed. For example, if three grains of the green iodide be taken internally as a daily dose for fourteen days, the beneficial effects will be far less than those resulting from the employment of the same quantity divided into equal parts for the three channels named, and this notwithstanding the inevitable loss resulting from inunction and fumigation.

Mercury used in this triple manner affects the whole absorbent system more rapidly than when applied through only one such channel, and salivation under careful treatment less frequently precedes the desired physiological results.

Considered at its best, it is, however, an undesirable medicine; for, although in careful hands it may be made to do its duty without any evil after-effects, an error concerning constitutional susceptibility, or ignorance concerning a preceding mercurialisation, may be productive of much injury. I do not speak parenthetically; for, although my experiments have been conducted on brutes alone, it has been easy to ignore known peculiarities and previous treatment, and thus to bring the case to the level of those found in daily practice.

There is yet another channel by which mercury may be given—the lungs. Inhalation is, however, so rapidly productive of salivation and other dangerous conditions as to be altogether impracticable.

The second great absorbent—iodine—may, like mercury, be given by the mouth, inunction, fumigation, and inhalation. Internally, free iodine, its tincture, iodide of ammonium, and iodide of potassium, follow this order with regard to their readiness of action.

By inunction the same order is preserved—the crude iodine should be made into an ointment with lard without any other addition.

By fumigation—crude iodine, vapor *iodi*, iodide of ammonium, and iodide of potassium.

By inhalation—vapor *iodi*, and the iodides of potassium and ammonium; crude iodine is irritating when any pulmonary lesion exists.

In the case of any one of the above drugs its beneficial effects

are increased by its employment through more than one channel. But this increase is yet greater when for each channel is used the particular preparation most suited for it.

Iodine is a far more valuable absorbent than mercury, but constitutional peculiarities with regard to its action are of very frequent occurrence both in the laboratory and at the bedside. These peculiarities generally take the form of increased susceptibility to its influence; deficient susceptibility is very rare.

When the tubercular diathesis obtains, but without marked local symptoms, the inunction should be performed over the abdomen. This, with the internal administration of the drug, should suffice so far as itself is concerned. Inhalation, when no pulmonary symptoms occur, is not advisable, as the lungs are very readily irritated by the iodine, and local effects in such cases certainly precede constitutional.

It must be remembered that the action of iodine is always absorbent. When not concerned in the removal of effete or deposited material, its energies are expended in the absorption of the normal tissues.

It has been shown in a preceding article that it may be made to play an important part in the production of lymphatic exhaustion. This, however, is not so much the danger of its employment as an inhalant in general tuberculosis. That which results when no local tuberculous material is there for removal is the wasting of the lung tissue—pulmonary atrophy. The walls of the local vessels become weakened, and the local lymphatics enfeebled in their absorbent power.

When local tuberculosis obtains, the inunction should be effected over the region concerned. Fumigation may be practised under any form of the disorder, but inhalation is permissible in pulmonary phthisis alone.

Class 2. Astringents.—These are of service only in hæmorrhage and excessive expectoration. Internally there is but little choice between gallic acid, catechu, and krameria. These three are, in my laboratory experience, the best that can be employed. By inunction, gallic acid is to be preferred. Astringents cannot with success be applied by fumigation. By inhalation, however, they may be beneficially administered when pulmonary symptoms demand their employment, and then the spray will be found preferable to any other atmospheric means. No astringent with which I am acquainted has as powerful an action as iron. Either the perchloride or the sulphate may be used. The objection to its employment is

its irritant character. Animals during its inhalation breathe very frequently with great difficulty and cough violently. This is more especially the case with the perchloride. It is necessary, therefore, to remove the spray the moment it is found the iron acts as an irritant. All powerful astringents when administered by the spray act best in tepid water.

Another powerful therapeutic agent is atomised ice water. The temperature of this may be graduated by having three or four vessels in use, and the addition to their contents of varying quantities of tepid or cold water. Atomised water just above the freezing point has in my hands arrested very severe pulmonary hæmorrhage without fail. The external application of cold to a vital part with the object of checking deeply-seated local bleeding is permissible only when other means have failed. It is one of the most dangerous agents we have at command, for the first effect, by checking the superficial circulation, is to engorge the more deeply-seated vessels, and hence it frequently, in the laboratory, produces a fatal effect before any action on the bleeding vessels can result.

Class 3. *Medicinal Foods*.—These are amongst the most valuable in our store of resources. Although ordinary dietary contains everything that is required for the maintenance of health in debilitated states of the system, when absorption, digestion, and nutrition are, to a greater or lesser extent, impaired, common food is not in that form which will most readily become incorporated into the system, and it does not, like the articles of which I am about to speak, present another desideratum—the greatest potential nourishment in the smallest possible bulk. All these foods may be taken either by the mouth or rectum. The rectum, as the sole channel, is useful only when the stomach, on account of its irritability, rejects food entering it.

As an adjunctive channel, the rectum is of great service. A third channel is the skin, and this may be made to serve either by placing the subject in the bath or by innunction.

Medicinal foods are useful under every form and in every stage of tuberculosis, but more especially in the far advanced stage of pulmonary phthisis. Indeed when a pulmonary lesion has taken place they are second to none among essential therapeutic agents.

A food whose virtues are insufficiently appreciated is glycerine. It exists normally in the nervous system in combination with other compounds. It is the basic ingredient of fat. It is capable by modification within the body of forming and assisting to form other

essential "proximate principles." That glycerine serves as a food in all these ways when taken in sufficient quantity is known to all physiologists.

The advantages of its administration is the labour thus saved to the system by the presentation to the tissues of an already elaborated material. Although an alcohol, it has no hardening effect on the nervous tissues; neither does it in any way injure the liver, or lessen the oxidation of the blood.

The antiseptic properties of glycerine will be considered later on.

Fats and Oils.—The physiological uses of these in the animal economy are familiar to all medical scientists. In atonic states of the digestive system, however, fat as a dietetic article is in great part wasted. But scientific pharmacy has rendered this fact nugatory, for in emulsified and pancreatised fat we have a material requiring no digestion whatever. The highest praise is due to scientific pharmacists for the preparations with which their skill has furnished the profession.

Cod-liver oil has been for many years called the sheet anchor of the physician in dealing with pulmonary phthisis. The metaphor may be completed by remarking that the anchor, though strong, has ever had such clumsily constructed flukes and fell on such a rocky ground that it had no hold, but let the poor ship Constitution be dashed hither and thither until it became a wreck.

It may be granted that unmedicated oil has this advantage over unmedicated fat—it does not need emulsifying. But saponification is an essential preliminary to its absorption. Hence, in atonic digestive states it effects but a minimum of good.

In pancreatised cod-liver oil we have, so far as can be, a perfect medicinal food, possessing all the nutritive potentialities of the oil, and requiring no digestion before its absorption.

All other dietetic articles can be given in a wholly or partly digested state, as the case may demand. Perfect predigestion of ordinary foods is not advisable save when the digestive system is much enfeebled, or when the food is particularly trying to the digestive organs, as is the case with oils, fats, and milk. I have found that a healthy animal maintained on predigested foods alone had its digestive powers impaired, and the evidence *post-mortem* would point as the reason the action the secreted, but physiologically inactive, because superfluous, fluids had upon the mucous membranes.

The salts of potash, soda, and lime are amongst the most important

ingredients of the tissues, and their value as nutritive foods is deserving of the highest appreciation. Under whatever form these salts may be given, they undergo in the system decomposition, but this does not lessen their value.

The nutritive powers of these salts are influenced by the elements with which the base is combined. Of these phosphorus is deserving of special consideration.

It will be dealt with more fully further on. Here it may suffice to say that the hypophosphites are more stimulating than the phosphates. When preparations of free phosphorus are given with the object of promoting nervous action, the phosphates are to be preferred to the hypophosphites as medicinal foods, for the reason that the phosphorus in the latter is in a low state of oxidation, and any excess of the unoxidised material in the system is certain to be productive of injury, not benefit.

Iron, manganese, and ammonia are true foods, as they occur in the body, but in such small proportions to the mass of chemical constituents, especially in the first two cases, that any deficiency can be supplied in a few small medicinal doses. Anæmia, long supposed to be due to a deficiency of iron in the system, a pathological error, found its orthodox treatment in ferruginous medicines. Iron was poured into the body in the fervent hope that with energy and perseverance enough might be got together to supply the chemical deficiency.

Mineralised monuments of illogical superstition! An ocean to fill a thimble!

These drugs being assimilable only in very small quantities as foods, it is inadvisable to give them chemically compounded with other elements it may be desired to offer to the tissues. Thus the phosphate of iron passes in great part through the body, unaltered and unabsorbed.

Oxygen, however, a veritable food, can be given in the black oxide of manganese. The value of oxygen is partly as a food, partly as an antiseptic. When the lungs are healthy, a fully sufficient quantity of the gas is inhaled in any pure atmosphere for the body's well-being. When pulmonary lesions obtain, and the blood is imperfectly oxidised, oxygen inhalations will be found of service.

Internally, the manganese before mentioned and the permanganate of potash will readily yield the element. But the best compound with which I am familiar is the peroxide of hydrogen; it parts with its oxygen more readily than any other preparation.

The whole of it is volatile, if rightly used; it contains the gas in a larger proportion than any other compound—16 of oxygen to 18 of water. That with which it is combined is water, and therefore inert. In using it we are practically dealing with the element alone in a liquid form; it can be given—in practice—to patients who would shudder at the idea of an inhaling apparatus.

Oxygen as a food is, in tuberculosis, of value only in the pulmonary form, and then only when there is extensive lung lesion, or other pathological conditions preventing the normal reception of the element into the blood.

Phosphorus.—This element is a normal constituent of the tissues, but not in the uncombined or free state. It exists in the body under the forms of free phosphoric acid and phosphates. Free phosphorus does not occur in any article of diet, and while, when taken medicinally, it becomes a food by combination internally with other materials, it exerts special stimulant and tonic powers during the period of such elaboration. It is only in very minute quantities that phosphorus can be physiologically incorporated into the animal system. Doses of $\frac{1}{20}$ and $\frac{1}{30}$ grain given to cats and guinea-pigs, respectively, thrice daily for three weeks, I have found produce fatty degeneration of the liver and heart, and phosphorus was discharged, in various degrees of oxidation per anum. Now phosphoric acid (H_3PO_4) contains 31 parts of phosphorus in 98 of the acid, and, therefore 30 gr. measures of the acid contain, approximately, 9 gr. + $\frac{2}{3}$ of a gr. of phosphorus, and this quantity—that is, 30 gr. measures of the acid—I have given daily to cats, for periods of from one to five weeks, without producing any hurt whatever. In the form of phosphate and hypophosphite, as seen, this drug can be taken in large quantities with only beneficial results.

If we consider for one moment the amount by weight of the nervous tissue in an adult's body, and compare it with the minute doses of free phosphorus that can be given without poisonous symptoms occurring, we shall readily see, even dismissing from our minds the evidence I have brought forward, the utter absurdity of the hypothesis that the therapeutical effects resulting from the medicine are due to its serving as *food* for a tissue in which its weight of phosphorus is contained many thousands of times over. As food, indeed, its action could be no greater on the nervous tissues than a few grains weight of meat daily on the whole body of a starving navvy.

As a therapeutic agent, taken daily for weeks or months, phos-

phorus requires to be administered with care. When the bowels are constipated, or rendered so by medicinal means, there is danger of poisoning, for the unabsorbed residue of the drug—and there is nearly always some amount—accumulates in the intestine, undergoing imperfect oxidation, and then entering the system not infrequently produces injurious and even fatal results. That which I have allowed to result in my experimental work, for the purpose of testing the influence of the drug, shows a possible danger, and may be a fatal fact in the history, unrecorded, of everyday practice—unsuspected, and, therefore, thrice deadly. In all cases of phosphorus poisoning, I have found the first seat of pathological change to be the liver. Phosphorus is a stimulant and tonic, and its proper application will be spoken of when dealing with this class of medicine.

The Mineral Acids.—Hydrochloric, sulphuric, and phosphoric acid have a two-fold action as food. First, that which they exert in the system when they have undergone absorption without change; and secondly, that which they effect in the intestines by their action on excreted and effete salts. These acids are not excreted in the free state but in combination, and chiefly by the urine.

Both in the blood and intestines they are conservators of energy by the chemical changes they effect in effete salts. Under their influence the body becomes better nourished, and the fæces poorer in their mineral constituents.

The proportionate quantity of the acid in each case absorbed unchanged, depends entirely on the presence or absence, and in the former case the nature, of material in the stomach and that portion of the intestines into which the acid may pass.

The presence of any combinable base or salt will cause a chemical reaction to occur, so that given before or after meals these acids, as such, do not undergo absorption.

Phosphoric acid in the free state occurs in the nervous centres, and the drug is therefore of value as a food. Also, by the conservative phosphates it assists to form, it is of service in furthering bone development in young children.

To sum up. While all the acids named are conservators of energy by renewing the activities of effete material, phosphoric acid is, in addition, a direct food for the nervous tissues. The pharmacopœial dose of this drug is altogether too small. I have frequently taken, when fatigued, three drachms in water, and have prescribed for brain-workers from one to two drachms, and never once with any injurious, but with, on the contrary, markedly beneficial, results.

But it must be understood that in none of these cases did any natural irritability of the bowels obtain. With a relaxed or irritable intestine, even a dose of thirty minims will produce diarrhœa. The common sense of a practitioner will dictate that he should satisfy himself as to the state of the bowels before prescribing the medicine, and to be certain of no injury arising through an error on this score he should give the drug in gradually increasing doses, commencing at, say, half a drachm.

With regard to brutes, the smallest dose I have (in experimenting on cats) found produce diarrhœa was twenty-six minims in three ounces of water. Some of the animals would take one drachm and a half without any subsequent morbid symptoms. When those who were affected by the minimal dose mentioned were subsequently made to swallow quantities varying from one to two drachms, the only effects, both when the acid was given strong and diluted, were vomiting and increased diarrhœa.

Systemic poisoning by phosphoric acid is, in the laboratory at any rate, a physiological impossibility.

[*To be concluded.*]

HYPNONE : ANOTHER NEW HYPNOTIC.

DR. DUJARDIN-BEAUMETZ recently submitted to the Académie de Médecine of Paris the results of a series of observations on acetophenone, or, as it is more commonly called, hypnone. This compound is prepared by the action of chloride of benzoyl on zinc-methyl, or by distilling together a mixture of benzoate and acetate of calcium. It is a colourless mobile liquid, having an odour not unlike oil of bitter almonds or cherry-laurel water. It has a very decided physiological action, for a cubic centimètre injected under the skin of a guinea-pig produced a torpid comatose condition, from which the animal did not recover. The respiration was quickened, the heart-beats became fewer in number, the animal started convulsively, gradually grew colder, and died. To produce sleep, it should be given in doses of from two to sixteen minims; and, if administered at bedtime, it uniformly produces a well-marked hypnotic action. It may be diluted with alcohol, ether, or glycerine, but the best way to give it is in capsules. It communicates to the breath a somewhat disagreeable odour, but its taste may be masked by syrup of orange-flower or oil of sweet almonds. Dr. Dujardin-Beaumetz's observations have been fully confirmed both by Dr. Constantine Paul and by Dr. Huchard.—*Brit. Med. Journal*, Feb. 20, 1886.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Transactions of the Academy of Medicine in Ireland. Vol. III.
Edited by WILLIAM THOMSON, M.A., F.R.C.S., General Secretary; Surgeon to the Richmond Hospital. Dublin: Fannin & Co. 1885. Pp. 468.

THE Report for 1883-84 accompanies the Transactions for 1884-85. We have no reason to doubt that the growth of the Academy during the latter session equalled or exceeded its progress in the second year of its sturdy infancy. In the quality of the papers submitted to the Sections there has been no falling off; but we observe that the number of communications is less, by 9 per cent., than that of the previous session, the diminution being most marked in the Medical and Surgical Sections. In each of these the number of papers read was only two-thirds of the corresponding number in 1883-84; and in the Obstetrical Section there is a numerical falling off amounting to 30 per cent. No address, either by the President or by a President of a Section, finds a place in this volume—an omission much to be regretted. Nor is any discussion reported, although it must often have happened that discussions “of importance and interest” followed papers communicated; and provision for reporting them is expressly made in rule 64. This same rule, by the way, gives the General Council power to decide what papers shall appear in the Transactions—a power, we suspect, rarely, if ever, exercised. Some flies are preserved in the amber of this volume, the omission of which would have made room for the more useful constituents indicated.

We turned with interest to Surgeon-Major Hamilton’s paper *On Cholera*, which contains much valuable information on the subject, and adopts Dr. Bryden’s views—that the disease is “earth-born and air-borne.” Written by an officer whose Indian experience appears to have been confined to Bengal and the North-West Provinces (as we infer from his remarks about “caste prejudices,” and his want of appreciation of what has been done for sanitary improvements in

other parts of India), it makes no attempt to adapt the course of epidemics in the south and west, or in Europe, to Bryden's theory. The task would, we suspect, have been a hopeless one. He examines, in order to condemn, "the theories usually set forth in opposition to" Bryden's, which he styles the "water theory" and the "human intercourse theory." As to the former, in spite of "Pettenkoffer" (*sic*) and Dr. Klein, we must continue to hold that the man who drinks water containing choleraic excreta runs enormously greater risk of an attack of cholera than if he drank of water equally foul in every respect *but* the absence of the specific poison—whatever this may be. It is not *certain* that he will be attacked, any more than that every unvaccinated person brought into close contact with a case of small-pox will take this disease, or every one bitten by a rabid dog will die of hydrophobia. But this is no argument against the "water theory." As to "human intercourse," we are glad to find it "admitted that, under certain circumstances, it may be a factor in spreading an epidemic." Even Dr. Bryden, we are told, allowed that cholera was probably contagious *in Europe*. If human intercourse, then, is, in any degree, instrumental in spreading cholera, why are we told that "quarantine has as much power to keep out epidemic cholera as the proverbial pitchfork has to keep back the tide?" Quarantine may be "impracticable," is undoubtedly "vexatious," but why "useless?" If the disease is "earth-born and air-borne," and there is no relation of cause and effect between one case of cholera and another, why should a vessel, "in the case of cholera having been on board, be disinfected, and the crew isolated for at least ten days subsequent to the appearance of the last case?" Does any rational being, except Surgeon-General Cunningham and his handful of followers, doubt that if *no* person or thing were landed, directly or indirectly, from a cholera-infected place, on the coast of Ireland, we should be perfectly safe from "air-borne" infection? These denials of the existence of a poison of some kind produced by a cholera patient and transferable from him to other persons, and opposition to every precaution which can be called "quarantine," would be ludicrous if they were not so mischievous. Mr. Hamilton is, we are happy to say, healthily inconsistent; and the excellent advice he gives in this paper may be followed by any of us who may have to deal with this formidable disease in the coming summer. Happy they who, after experience, will be able to differ from the author's conclusion, "that the outlook, as regards the prevention and treatment of cholera, is dark indeed."

Dr. Finny's paper on *Hyperpyrexia in Rheumatic Fever* deserves special notice. The complication is a rare one—the Middlesex Hospital cases, 1869–80, giving a percentage of only 1·7. The mortality, in 67 cases tabulated in the Clinical Society's Report on Hyperpyrexia, was nearly 50 per cent. The usual explanation of the symptom—that it is due to the retention of some poisonous material in the blood following arrest of sweating—an explanation accepted by Dr. Bristowe, must be rejected. Dr. Finny remarks, "it was demonstrated that, of the 67 cases referred to, sweating was distinctly present in two-thirds, and sudamina were noted in 22; and that a dry, non-perspiring skin was present in not more than one-fourth of the cases. In both my cases sweating existed immediately preceding the occurrence of the hyperpyrexia, and sudamina were present in one." Other important questions are ably discussed in this paper; but our limits will permit notice of one point only. After examining the various methods of treatment recommended, he says:—

"The prompt and early application of cold to the surface is, therefore, the most valuable mode of treatment of the hyperpyrexia in acute rheumatism, as it is in the similar condition of insolation or heat apoplexy. The chances of its efficacy are greater the earlier it is had recourse to. The temperature cannot safely be allowed to rise above 105°."

Dr. Kennedy's *Case of Senile Dementia*, a not uncommon disease, of which restlessness is the most prominent symptom, illustrates the advantage of prescribing mercury, at least where chloral, hyoscyamus, and other more obvious remedies have failed to give relief. It illustrates also the fact (of which, however inexplicable, there is sufficient evidence), that many cases of insomnia or of imperfect sleep are benefited by turning the bed-head to the north.

Dr. Little's paper *On the Form of Pneumonia prevalent in Dublin* was intended to elicit and, we have no doubt, did elicit a discussion which added to its own value; but from the benefits of which outsiders are excluded.

Dr. Cruise's *Notes of Visits to Contrexéville and Royat-les-Bains* have already appeared in our pages. They are interesting, and will, no doubt, be useful to those of our brethren gifted with patients whose circumstances enable them to go abroad for health.

There seems to be some little uncertainty in the minds of "the authorities" as to the classification of papers. Dr. Wright's *Case of Sloughing of the Rectum* we should have expected to find in the

Surgical Section of the Transactions; and Mr. Thomson's *Three Cases of Ovariectomy* might have gone with Dr. Macan's fourteen in the Obstetrical Section. All Mr. Thomson's cases were successful. Of Dr. Macan's only one terminated fatally—giving a mortality of 7.1 per cent. The practical remarks following the abstracts of these cases are of great value.

Mr. J. K. Barton groups together six *Cases in Knee Surgery*. Two of these were successful excisions of the joint—one for disease, the other for deformity resulting from disease. A case of amputation through the joint was also successful.

Dr. T. More Madden's paper *On the Treatment of Uterine Fibro-Myomata* will be read by obstetricians with interest. He discusses hysterectomy, oöphorectomy, and the other intra-peritoneal operations; and, while fully admitting the enormous benefits due to the recent extension of abdominal surgery, he protests against "the spreading cacoethes operandi prevalent amongst abdominal sectionists of the Birmingham school." He quotes, in illustration, the language of one of these gentlemen, who—"in reporting upwards of a hundred cases of abdominal section undertaken within a year—boasts that he performs this operation in every case which he has 'the opportunity of operating on,' without 'the slightest attempt at the selection of cases, and at choosing the most suitable and rejecting those which did not seem to promise to be successful.' Nor does he hesitate to admit that, had there been such selection of cases, he would have had fewer deaths of patients on whom he 'operated with the idea of giving them the slight chance of life the operation afforded, knowing well beforehand how slight that chance was.'" Against this sort of thing we protest as earnestly as Dr. Madden, whose words we transcribe:—

"Believing, as I do, that abdominal operations unquestionably afford the only possible method of saving health, or relieving otherwise irremediable suffering in some cases of uterine fibro-myomata, I trust that the voice of the profession will make itself heard in no uncertain tone in reprobation of the operative *furore* which has manifested itself in some quarters with regard to the performance of abdominal sections for uterine tumours, and which else may lead to a reaction against the legitimate employment of procedures so valuable in suitable cases. In my student days I was taught that an operation was justified only as means of saving life or relieving suffering otherwise hopeless. It would now, however, appear that the gravest operations may be resorted to in every case in which the opportunity presents itself, and without any regard to their

probable consequences. For my own part, I am unable to accept this doctrine, and am still old-fashioned enough to believe that no operation—especially one of such gravity as that under consideration—should be undertaken save as a matter of necessity, and with a reasonable prospect of a successful result. If the indiscriminate performance of gastrotomy now advocated by some eminent specialists be unfortunately ever generally adopted, then the sooner the better it will be that those suffering from any of the diseases in which abdominal section is now abused should abandon surgical aid and trust themselves, as formerly, to unassisted Nature's kindlier euthanasia" (p. 246).

Another paper in the Obstetrical Section to which we think special attention due is Dr. Purefoy's on *Intestinal Obstruction* in children, particularly to the paragraphs relating to diagnosis (p. 266). We note that the clumsy old mechanical plan for the relief of intestinal obstruction by the dead-weight of mineral mercury has been successfully employed in three cases recently. The danger of puncturing the intestines to discharge flatus, also, is incidentally mentioned: "from some unexplained cause punctures made under these circumstances are apt to remain gaping, and thus, of necessity, a fatal peritonitis ensues, as happened in two cases."

The Pathological papers, with two exceptions, do not demand special notice. Mr. Charles B. Ball illustrates the connection between working with tar and epithelial cancer, by a second case—a previous one having been brought before the Section in the Session 1883–84. Of 19 men employed in Dublin in tar-distillation three have been operated on. It appears that workmen employed in the manufacture of carbolic acid suffer, in many instances, from warts; and, indeed, Mr. Ball's paper is followed by a case of Mr. Story's, in which epithelioma of the eyelid resulted from irritation by crude carbolic acid.

Mr. George Foy, in his remarks on *So-called Malignant Growths*, suggests a connection between the prevalence of cancer and "the scarceness or plenty of food stuffs;" points out the disappearance of "cancer scroti" from hospital reports; infers from the greater frequency of cancer in commercial centres, from "the influence of mental trouble in predisposing to it," from a case of Dr. Snow's, in which intense anxiety was followed by cancer, that controllable circumstances increase the number of cancer cases, and, consequently, that the influence of heredity has been exaggerated. He objects (as do we) to the term "malignant," a survival from days of darkness and ignorance.

A result, no doubt, of our "personal equation," an infirmity from which even reviewers are not exempt, we found the papers read before the Sub-Section of State Medicine the most interesting in the volume.

Dr. Cosgrave's short paper on *Sewer-gas and Disease in Dublin* contains nothing recondite; but it puts matters of the highest practical importance in plain language, and should be studied by all householders, doctors (who are not invariably as careful about sanitation in their own dwellings as might be expected) included. The instances of defective sewerage and its consequences, which Dr. Cosgrave adduces, are most instructive. We endorse his advice, that the examination of premises suspected to be defectively sewered or trapped should not be entrusted to an amateur or a plumber, but should be made by a competent sanitary engineer.

Sir Charles Cameron gives an account of the working of the Adulteration Acts in Dublin. The Act of 1860 seems to have been abortive everywhere else; but in Dublin more than a hundred convictions were obtained under it, most of them for adulteration of milk. Sir Charles assumes a standard for milk of 12 per cent. solids; but does not advise prosecution unless they fell below 11.5. His method of stating the proportion of water-adulteration is the more convenient, but not the more usual, and should be noted. He expresses the adulteration as so much per cent. added to the original milk. "For example, a gallon of water is added to a gallon of milk. It may, in such case, be said either that the mixture is milk containing 50 per cent. of added water, or that it is milk to which 100 per cent. of its weight [*sic*] of water had been added as an adulterant. I invariably employ the latter method." The "Sale of Food and Drugs Act" (38 & 39 Vict., c. 63, 1875) has been utilised to a large extent in Dublin, and with such success that "at present, very few articles are liable to adulteration save milk and butter. None of the specimens of coffee, tea, sugar, mustard, pepper, and liquors, lately collected for analysis, have proved to be adulterated."

Dr. Grinshaw discusses the relative strength of town and country populations in this country, defining "a town" to be a place with municipal government, having a population of 10,000 or upwards; and calling "the district in which that town was situated a 'civic' district, and the population of the whole district a town or civic population—the area adopted as comprising the civic population being the poor-law union or superintendent registrar's district in

which such populous place was situated." Thus classified, the mean civic population of Ireland in 1871-80 was 1,476,929, and the rural 3,816,678. The average annual mortality of the former was 22·5 per mille, of the latter 16·6, the difference being 5·9. It follows that the counties containing large towns show a higher death-rate; Dublin, Waterford, and Antrim heading the list. The "temporarily sick" of the census returns correspond: 7·75 per mille of population who were sick, being made up of 6·64 rural and 10·51 civic. We cannot quite share Dr. Grimshaw's apparent surprise at this superiority of rural populations. Townspeople should, he says, "be better housed, better supplied with water, . . . have better sanitary appliances, better cleansing arrangements," &c. We doubt if the poorest isolated cabin, perhaps "keeping open house for want of a door," certainly enjoying freest ventilation with the purest air, is not in better sanitary condition than the artisan's house in a city lane. The spring-well is a better source of water-supply than the house-cistern or water-butt, and the open field a wholesomer receptacle for excreta than the unsewered privy, or even the most scientific water-closet.

When we examine the causes of civic and rural mortality, respectively, we find that all the most important causes (except childbirth) are more active in towns. Taking zymotics, phthisis, and respiratory diseases (which produce more than one-third of the total Irish mortality), we learn the town mortality exceeds the average by 10·6, 8·1, and 11·4 per 10,000; and exceeds the rural by 14·5, 11·3, and 15·8. Taking phthisis and diseases of the respiratory organs together, as they obviously ought to be taken, we learn that, during the decade 1871-80, they caused more than one-fourth of the total mortality of the country, and that the mean civic death-rate due to these causes exceeded the mean rural by 27·1 per 10,000.

We quote, somewhat condensed, Dr. Grimshaw's remarks on puerperal causes of death. The tables giving the relative distribution of deaths, in civic and rural populations, from puerperal fever and childbirth show a result—

"Which differs remarkably from the results obtained where the town and country death-rates are compared for any of the other diseases or groups of diseases. . . . The death-rates to the population from puerperal fever and childbirth combined are almost the same in town and country—namely, 1·8 and 1·7 per 10,000 respectively; taken separately, however, the death-rate from puerperal fever, which is an infective disease,

is slightly higher in town than in country, while in other forms of death from childbirth the mortality is greater in country than in town. . . . The relation of deaths from puerperal fever and childbirth combined to births registered is, for the whole of Ireland, at the rate of . . . 6·6 per 1,000, for puerperal fever alone it is . . . 2·5 per 1,000, and for childbirth . . . 4·1 per 1,000 births. If, however, town and country are compared it appears that the mortality from puerperal fever in town districts is . . . 2·8 per 1,000 births, while in country districts it is . . . 2·4 per 1,000, being slightly less. On the other hand, the deaths from 'childbirth' are proportionately less in town than in country; in the civic districts the rate is . . . 3·6 per 1,000, while in country districts it is . . . 4·3 per 1,000 births. If the two be taken together the result is that deaths from parturition are at the rate of 6·4 per 1,000 births in town as compared with 6·7 in country districts. It is clear that this excessive mortality from parturition can be attributed only to the less favourable circumstances under which lying-in-women are treated in the country as compared with town. . . . The explanation must be in the comparative neglect with which lying-in-women are treated in the country parts of Ireland" (p. 401).

In the remaining paper of this Section, Dr. Jacob goes on the war-path valiantly but, we think, hopelessly against *Compulsory Notification of Infectious Disease*. Our profession is well represented in the present Parliament, and the case, as our champion puts it here, is a good one; but we cannot feel sanguine as to the result.

We shall notice but one other paper in this volume—communicated by Professor Cunningham from Professor Francis J. Shepherd of McGill University—*On the Musculus Sternalis in Anencephalous Monsters*. Dr. Shepherd's investigations confirm Dr. Cunningham's view, founded on the nerve-supply of this muscle, that the latter belongs to the pectoral group, and is not a remnant of the *panniculus carnosus*. It appears that the muscle is very common in this group of monsters, and that these are more frequently female than male.

Handbook of Diseases of the Skin. Edited by H. v. ZIEMSEN, M.D. Illustrated with Eighty Wood Engravings and Colour Prints. New York: William Wood and Co. London: Sampson Low and Co. 1885. Pp. 658.

THIS Handbook of Skin Diseases is presented by the publishers to each of the original subscribers of "Von Ziemssen's Cyclopædia," and makes the Cyclopædia one of the most complete records of medicine

ever published. The publishers of this work have far exceeded the amount of matter they undertook to give their subscribers. The volume, strongly bound in cloth, is replete with information upon the special subject it deals with, contributed by several of the most eminent Continental authorities.

*RECENT WORKS ON MATERIA MEDICA AND
THERAPEUTICS.*

1. *Von Ziemssen's Handbook of General Therapeutics.* In Seven Volumes. Vol. II.—*Antipyretic Methods of Treatment*, by PROFESSOR C. VON LIEBERMEISTER. *Antiphlogistic Methods of Treatment*, by PROFESSOR TH. JÜRGENSEN. *Epidemic, Endermic, and Hypodermic Administration of Medicines*, by PROFESSOR A. EULENBURG. Translated by MATTHEW HAY, M.D., Professor of Medical Jurisprudence in the University of Aberdeen. With 12 Illustrations. London: Smith, Elder, & Co. 1885. Pp. 511.
2. *The Essentials of Materia Medica and Therapeutics.* By ALBERT BARING GARROD, M.D., F.R.S., &c. Eleventh Edition. Revised and Edited by NESTOR TIRARD, M.D., Professor of Materia Medica at King's College. London: Longmans, Green & Co. 1885. Pp. 545.
3. *A Guide to Therapeutics.* By ROBERT FARQUHARSON, M.P., M.D. Edin., F.R.C.P. Lond., LL.D. Aber.; late Lecturer on Materia Medica at St. Mary's Hospital Medical School, &c. Fourth Edition. London: Smith, Elder & Co. 1886. 8vo. Pp. 394.
4. *The Prescriber's Pharmacopœia.* Revised and Edited by NESTOR TIRARD, M.D. Lond., M.R.C.P.; Professor of Materia Medica and Therapeutics at King's College; Assistant-Physician to King's College Hospital; and Physician to the Evelina Hospital for Sick Children. Sixth Edition. London: J. & A. Churchill. 1885. 12mo. Pp. 168.
5. *The Pocket Pharmacopœia for 1885.* By ARMAND SEMPLE, B.A., M.B., Cantab., &c. Students' Aids Series. London: Baillière, Tindall, & Cox. 1886. Pp. 192.

1. In our recent notice of the first volume of this Handbook, we called attention to the importance and character of the work as a

whole. This, the second volume, consists of a series of monographs dealing with some special methods of treatment and with some of the modes of administering medicines. The authors are men whose names are well known, and the translation has been excellently done by Dr. Matthew Hay, of Aberdeen, assisted, as he cordially acknowledges, by Dr. Baron.

The first article, by Professor von Liebermeister, is on "Antipyretic Methods of Treatment." This subject is discussed under four heads:—First, the methods of directly abstracting heat from the body, and the effects. Next, those medicines which have an antipyretic effect; then, antipyretic dietetics; and finally, the indications for the application of antipyretic treatment, and the results which the employment of it has up to the present yielded.

Notwithstanding what has been done by a few English and Irish physicians, there is still undoubtedly a prejudice amongst us against the methodical treatment of pyrexia in ordinarily severe cases of fever by the repeated immersion of the patient in cold water baths. And in this country, at least, we think it is rarely or never made use of, except, perhaps, as a *dernier ressort* in cases of urgent hyperpyrexia. The reasons for this "prejudice," if such it be, it is unnecessary to discuss here. If, however, statements supported by the weight of personal authority and scientific deductions, and by statistics deduced from thousands of cases, could convince anyone that the result of such a mode of treatment—in the absence of well-defined contradictions—was so satisfactory, and so superior to any other method, that it should be followed "in severe cases of fever as a matter of course," a study of this able and exhaustive article would probably do so.

Liebermeister has accurately investigated the extent of action, and the comparative effectiveness of the chief methods for abstracting heat. He is careful to point out that the choice of a method depends upon several circumstances, but that the employment of the ordinary cold bath is by far the most effective heat-abstractive method. After this comes the gradually cooled bath (von Ziemssen's method), then the wet pack, and finally cold affusion. The weaker heat abstractors—*e.g.*, cold spongings, compresses, ice-bladders, &c., are agreeable to the patients, and may, in certain circumstances, be a valuable auxiliary. But if their action on the temperature of the body is observed, and a calculation be made as to the amount of heat that can possibly be abstracted from it by such processes, even in the most favourable cases, it will be found that they are next to

no value as contrasted with the action of a cold bath. While they cannot supersede the latter, they are by no means to be rejected. "It was a step in advance which was made last century, when it was found out that we might, without hesitation, bathe the face and hands of a fevered patient with cold water; but it would be a serious mistake if, under the idea that we might effect a material result by means of the milder methods, we should in consequence neglect the more effective methods of heat-abstraction in any serious cases."

It is chiefly in severe cases of enteric fever that the cold bath has been employed; and numerous tables and observations as to the result of such treatment, and the influence the period of the day, &c., has in its employment, are given in the text. Cold baths appear to have, on the whole, a somewhat less effect in pneumonia than in enteric fever; and it is remarked that the fever of the former disease usually offers a greater resistance to other antipyretic agents as well.

Liebermeister acknowledges that the action of a cold bath is "very severe treatment for the majority of patients, especially if the baths have to be often repeated." This being so, we doubt whether it would always be so easy as the author thinks to convince the majority of our patients in this country, or their friends, "by reason," of its suitability or necessity.

The statistics adduced seem to establish that the existence of a catarrh of the respiratory passages is no bar to the use of the cold bath, and that affections of the pulmonary organs are less frequent in enteric patients thus treated, than they were prior to the introduction of this method of heat-abstraction.

Full and clear directions are given as to the procedure to be observed in giving the different kinds of baths described, their repetition when necessary, and the indications and contra-indications for their use.

The cold bath and other similar *antithermic* methods, by which heat is abstracted from the body, and its temperature thereby directly lessened, are not, theoretically, so perfect or so rational as those which act by diminishing the production of the heat, and which, strictly speaking, are the only true *antipyretic* measures. Of medicines possessing this action, Liebermeister's views as to quinine and salicylic acid need alone be mentioned, as he now rarely uses digitalis and has given up veratrine. When properly administered, quinine is a valuable and generally reliable antipyretic. It is elimi-

nated in a comparatively short time through the kidney; therefore a full antipyretic action can only be obtained when a large quantity of the drug is quickly absorbed. It is mere waste to give quinine, in the hope of its acting as an antipyretic, in the small doses we have seen practitioners prescribe in it. A dose of 20 to 45 grains is necessary for such a purpose in the case of adults; and it is also absolutely necessary, to secure a full antipyretic action, that the whole dose, if divided, be administered within the course of half an hour. Von Liebermeister accentuates this point, inasmuch as its non-observance was the reason why, at first, he and many other observers thought quinine was not an efficient antipyretic. As a rule, he does not repeat the dose until after 48 hours, and in no case until after 24 hours. It is of special interest to note that in healthy persons who have no fever, no perceptible lowering of the temperature of the body is induced by quinine.

There are various special circumstances indicated as influencing the extent of the temperature-reducing action of both quinine and salicylic acid—such as the largeness of the dose, the period of the day, the nature and intensity of the disease, its stage, and the idiosyncrasy of the patient. Quinine does not produce its effect until about 8 to 12 hours after its administration; and the time of its strongest action coincides, by preference, with the time of the spontaneous morning remission. Therefore, between the hours of 3 and 7 in the afternoon appears to be the best time for administering it. The antipyretic action of salicylic acid appears, on the average, considerably sooner than that of quinine. A definite diminution of the temperature may, in general, be observed within 1 to 2 hours after the ingestion of a sufficient dose, and the greatest diminution happens in about 4 to 6 hours after its administration. Hence, it ought to be administered late in the evening, somewhere between 8 and 10. In consequence of its comparatively rapid absorption, it is desirable not to administer the whole dose at a time, but to divide it into small doses, and give one of these every hour, or hour and a half. With adults, Liebermeister usually employs, for antipyretic purposes, a dose of an extemporised, freshly-made, saturated solution of salicylate of sodium, corresponding to 75 grains of salicylic acid. As regards its antipyretic action, he looks upon salicylic acid as a perfect substitute in every respect for quinine; but, in consequence of an impression that salicylic acid exercises rather an unfavourable action upon the heart, he inclines, in cases in which there are clear signs of cardiac weakness, to give the preference to quinine. But

if the action of the heart is strong, and its rate not too high, he regards salicylic acid as an antipyretic entirely free from danger. Another point is, that salicylic acid and quinine by no means exclude each other, but may be administered to the same patient, either after one another, or combined in such a way that their actions, as regards time, coincide and are conjoined. Indeed, the principal feature in von Liebermeister's method of applying the antipyretic treatment consists not so much in striving to suppress the exacerbations as to prolong and strengthen the remissions of the fever. Antipyretic medicines, he believes, attain their complete value only when they are used in combination with, and as a support to, the cold water treatment. Such a combination produces the strongest remissions, and the most benefit to the patient. And in order to strengthen the reciprocal action of the two, so that their action may correspond with the spontaneous course of the temperature, he holds it requisite to employ the cold bath principally during the night, in order that it also may take effect at the time when the daily temperature is low—*i.e.*, between midnight and morning.

The chapters on Antipyretic Dietetics, and on the Application and Results of the Antipyretic Treatment, will well repay the reader, who cannot fail to be impressed by the calm and admirable manner in which the whole subject is laid before him.

We have left ourselves but little space to speak of Jürgensen's learned and exhaustive essay on Blood-letting and on Transfusion. It constitutes the greater portion of the volume, and is replete with valuable information. Many moot points as to the value or otherwise of transfusion in different cases, and the indications for its performance, are critically discussed. Prof. Jürgensen is not an enthusiast in his recommendation of the operation; on the contrary, he points out that it should never be done in any given case unless a scientifically supported reason can be adduced for its performance as a therapeutic measure.

The remaining portion of the volume is by Prof. Eulenberg, of Griefswald, who is also the author of a classical work on hypodermic injection. In his hands, as might be expected from his high reputation, the subject of the epidermic, endermic, and hypodermic administration of medicines is treated of in a most comprehensive and scientific manner. He also gives numerous directions and hints, based on his large practical experience, which add much to the value of this portion of the work.

2. Dr. Garrod's work is the eleventh edition of what has long been a popular and valued student's text-book. Notwithstanding the number of recent rival works and new editions treating of the same subjects as it does, it holds its position as a useful, matter-of-fact, if not a brilliant companion to the *Pharmacopœia*. Although it does not, as a rule, give so much information as to the physiological action and therapeutic effect of special drugs as some of its contemporaries, its statements, generally, are as complete as the average student requires, or the practitioner looks for. No alteration has been made in the plan of the work, which has been brought into accord with the new *Pharmacopœia*, and edited with care and accuracy by the author's successor in his chair at King's College.

3. In preparing the fourth edition of his "Guide to Therapeutics," Dr. Farquharson has had regard to the very numerous alterations and additions contained in the British *Pharmacopœia* of 1885, so that the work keeps abreast of modern progress. We have still, however, to find fault with the unsystematic way in which the book has been put together, and to the absence of a table of contents which might afford a clue to the plan the author had in view when writing it.

An account of Non-official Preparations, covering some 12 pages towards the end of the work, is very disappointing, from its meagre details, in which respect it contrasts unfavourably with Dr. Whitla's "Manual of Materia Medica and Therapeutics," and with Martin-dale's "Extra-*Pharmacopœia*."

On the whole, the work strikes us as an imitation, on a small scale, of another equally chaotic treatise—Sydney Ringer's "Therapeutics." At the same time, in justice to Dr. Farquharson, we must say that the copious "Index," which closes his book, makes it a handy work of reference to busy practitioners and to students, who prefer to taste, rather than to drink deep of, the Pierian spring.

4. The "Prescriber's *Pharmacopœia*"—a little duodecimo volume, which would almost literally fit into the waistcoat pocket—first saw the light in May, 1841, and we do not wonder that it should have survived nearly half a century and reached a sixth edition. It is thoroughly systematic, and contains an immense amount of information in a remarkably small space.

5. As is stated in the preface of Mr. Semple's handy little book, it consists of an epitome of the new British *Pharmacopœia*, to which

is added a brief statement of the general action of the drugs, and the natural order and chief active principles of those of vegetable origin. It is of convenient size and shape for the pocket, and will be found useful as a handy work of reference by all practitioners desirous of refreshing their memory, and of prescribing in accordance with the *Pharmacopœia*.

The Story of the Heavens. By ROBERT STAWELL BALL, LL.D., F.R.S., F.R.A.S.; Vice-President of the Royal Irish Academy; Andrews Professor of Astronomy in the University of Dublin, and Royal Astronomer of Ireland. London, Paris, New York, and Melbourne: Cassell & Co. 1885. 8vo. Pp. 551.

ALTHOUGH this splendid volume is in no sense a medical work, yet we gladly open our columns to a bibliographical notice of it. Written by a distinguished Irishman, the book before us deals with topics of surpassing grandeur and interest connected with the science of astronomy—a science which from the earliest ages has engaged the attention of the mightiest intellects, while many of the phenomena pertaining to it come daily and hourly under the notice of the lowliest and simplest of mankind.

We may be permitted, in the first instance, to congratulate Sir Robert Stawell Ball on the titular dignity which has recently been conferred upon him, and to which he does even more honour than it to him.

The “Story of the Heavens” reads like a romance, far more marvellous than “The Arabian Nights.” As the author says:—“We have indeed a wondrous story to narrate; and could we tell it adequately it would prove of boundless interest and of exquisite beauty. It leads to the contemplation of the mightiest efforts of nature and the greatest achievements of human genius.”

In our opinion, Sir Robert Ball has told the story of the heavens “adequately.” Many of the readers of this Journal are already well acquainted with his descriptive power and command of language. On several occasions he has held large audiences entranced when lecturing at the Royal Dublin Society and in other places on the wonders of astronomy. He possesses the faculty of conveying, even to the unscientific mind, a fair conception of the deepest mysteries of the universe by dressing his thoughts in simplest language, and his powers of simile are unrivalled. An idea of the vast dimensions of the Sun is given by the following

trivial examples:—"If a railway train were laid round the sun, and if we were to start in an express train, moving sixty miles an hour, we should have to travel night and day for five years without intermission before we had accomplished our journey. If the sun be compared with the size of the earth, its stupendous bulk becomes still more apparent. Suppose his globe were cut up into one million parts: each of these parts would appreciably exceed the bulk of our earth. Were the sun placed in one pan of a mighty weighing balance, and were 300,000 bodies as heavy as our earth placed in the other, the sun would still turn the scale."—(Page 26.)

The chapter on the Sun closes with the following eloquent recital of what we enjoy through its benign influence:—"His gracious beams supply the magic power that enables our corn to grow and ripen. It is the heat of the sun which raises water from the ocean in the form of vapour, and then sends down that vapour as rain to refresh the earth and to fill the rivers, which bear our ships down to the ocean. It is the heat of the sun beating on the large continents which gives rise to the breezes and winds that waft our vessels across the deep; and when on a winter's evening we draw around the fire and feel its invigorating rays, we are really only enjoying sunbeams which shone on the earth countless ages ago. The heat in those ancient sunbeams developed the mighty vegetation of the coal epoch, and in the form of coal that heat has slumbered for millions of years, till we now call it again into activity. It is the power of the sun stored up in coal that urges on our steam-engines. It is the light of the sun stored up in coal that beams from every gaslight in our cities. For our power to live and move, for the plenty with which we are surrounded, for the beauty with which nature is adorned, we are immediately indebted to one body in the countless hosts of space, and that body is the sun."—(Pages 47 and 48.)

But it must not be supposed that Sir Robert Ball has sacrificed science on the altar of popular writing. On the contrary, the great scientific truths of astronomy are fully set forth, and the giant discoveries of Kepler, Newton, Copernicus, Huyghens, Galileo, Herschel, and other more modern astronomers, are described and explained.

Among the most interesting chapters in the volume are those on the distant suns (XIX.), in which a comparison between Sirins and our own sun is instituted; the distances of the stars (XXI.),

the spectroscope (XXII.), star clusters and nebulae (XXIII.), astronomical significance of heat (XXV.), and the tides (XXVI.).

The work is splendidly brought out by Messrs. Cassell & Co., and is profusely illustrated with coloured plates and drawings, including pictures of Lord Rosse's telescope, at Parsonstown, and of the great Vienna telescope, recently constructed by Mr. Howard Grubb, of Dublin. We cannot help thinking that such a volume should be in the hands of our professional brethren, and particularly in the hands of those among them whose lot is cast in the open country, and who therefore possess so many favourable opportunities, as they drive by night, of observing the wonders of the starry heavens.

Catalogue of the Pathological Museum of the Western Infirmary, Glasgow. Compiled by JOSEPH COATS, M.D. Glasgow: Printed by Alex. Macdougall, 81 Buchanan-street. 1885. Pp. 244.

THE Museum whose contents are herein catalogued, aims at more than being an appanage of the pathological department. The object of this Catalogue is to make the Museum available as a means of teaching. In composing the descriptions of the specimens catalogued, resort has been had to the Pathological Reports, in which the clinical history has been more or less fully entered. Though such publications possess a paramount local interest, the Series II.—Organs of the Circulation—may be consulted with advantage by any, on account of their very interesting clinical details. The volume is printed in excellent type, and has a useful index.

Clinical Figures. London: Danielsson & Co., 23 Southampton Buildings, Chancery-lane, London, W.C.

THESE figures consist of outlines of bones for general surgery, and also some brain tracings after Feré for marking injuries of that organ. The sheets are gummed, so as to allow of easy transfer to the note-book. They are very useful for every surgeon who carefully records his cases, but it would be an advantage to have the sheets perforated.

PART III.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

ACADEMY OF MEDICINE IN IRELAND.

President—ROBERT M'DONNELL, M.D., F.R.S.

General Secretary—W. THOMSON, M.D.

OBSTETRICAL SECTION.

President—T. MORE MADDEN, M.K.Q.C.P.

Sectional Secretary—WILLIAM C. NEVILLE, M.D.

Friday, January 8, 1886.

The PRESIDENT in the Chair.

Specimens Exhibited.

THE PRESIDENT exhibited a large multilocular ovarian cyst, removed from a multipara, aged fifty, under his care in the Mater Misericordiæ Hospital. The patient had recovered.

MR. J. L. LANE exhibited a so-called hydatid mole, expelled from a patient in the Rotunda Hospital.

DR. MACAN showed :—

(1) An example of commencing carcinoma of the cervix uteri, secondary upon carcinoma of the rectum.

(2) Portions of an intra-uterine fibro-myoma which had undergone myxomatous degeneration. With the aid of Schultze's double forceps-spoon the entire tumour had been successfully enucleated.

(3) A small fibro-myoma removed from the cervical canal by enucleation. The tumour was purely cervical, the internal os being quite closed above it.

(4) A small fibro-angioma which had been attached to the cervix by a pedicle no thicker than a goose-quill.

(5) A papilloma vulvæ of unusual size removed by a ligature round its base.

(6) An ovarian tumour, which had been associated with prolapse of the uterus.

Displacements of the Ovaries.

THE PRESIDENT, DR. MORE MADDEN, read a paper upon "Ovarian Displacements." [It will be found in the February Number of this Journal, page 111.]

MR. DOYLE looked upon over-fulness of the intestines as a not uncommon cause of ovarian prolapse. The pressure of the sigmoid flexure upon the left side accounted for the more frequent prolapse on that than upon the right side. Many cases could be cured or relieved by keeping the colon emptied with mercury.

DR. ATTHILL had very seldom found mechanical treatment of any service in cases of prolapsed ovary.

Fibro-Myomatous Tumour.

DR. W. J. SMYLY showed a fibro-myomatous tumour which he had enucleated from the cervix of a patient in the City of Dublin Hospital. These tumours occurring in this situation are interesting on account of their rarity, and the obstruction which they are liable to cause during delivery. The operation was simple and the patient made a good recovery. He also exhibited both ovaries and the right Fallopian tube which he had removed from a patient suffering from uterine-fibroids, and whose life was seriously endangered by violent hæmorrhages. The operation was a difficult one owing to the thickness of the abdominal wall and the ovaries being bound down by adhesions, the result of previous perimetritis. The patient made an afebrile convalescence, and has not menstruated since the operation.

DR. MACAN entirely agreed as to the rarity of cervical tumours, and the dangers that might arise from their presence during labour. They might necessitate the destruction of the child, and might subsequently undergo disintegrative changes with accompanying septicæmia. As regards labour, uterine tumours were dangerous in proportion to their nearness to the cervix. In reference to Dr. Smyly's second case, he regarded the removal of the ovaries for bleeding fibroids as one of the greatest improvements in modern gynæcological surgery. Such removal when properly carried out gave certain promise of cure, while the danger of the operation with the aid of antiseptics was almost *nil*. When the tumour was large it might be difficult to rotate it so as to get at the ovaries during the operation, but under any circumstances their removal was much less dangerous than that of the uterus. He would never perform the latter operation when the former was possible.

DR. ATTHILL had formerly relied in cases of bleeding fibroids upon scraping out the uterus and applying nitric acid after the necessary dilatation. Finding, however, that the relief never was permanent he had abandoned this treatment. As a temporising measure he had experienced

better results from the occasional injection of iodised phenol. This might be done once a month where more decisive measures did not seem necessary. Under such treatment he had found the hæmorrhages lessen in amount, and the intervals between them lengthen. Only in a limited number of cases were the pain and hæmorrhage such as to necessitate surgical interference. Enucleation of large tumours was much the most dangerous mode of surgical treatment. When he had formerly tried it he lost patients, and succeeded in removing the tumour only in a few cases. Now he would give the preference to removal of the ovaries, being prepared, in cases where the tumour was large and the ovaries might not be found, to remove the entire uterus. He did not question that palliative measures had formerly been too exclusively relied on.

DR. SMYLY replied briefly.

The Section adjourned.

PATHOLOGICAL SECTION.

President—T. EVELYN LITTLE, M.D.

Sectional Secretary—J. B. STORY, M.B.

Friday, January 15, 1886.

The PRESIDENT in the Chair.

Dentigerous Cyst.

MR. ARTHUR BAKER read a paper on a case of dentigerous cyst occurring in the lower jaw of a boy aged sixteen. The tumour had existed for six months previous to operation. When opened an unerupted canine tooth was found at the bottom of the cyst. This tooth showed the malformation known as dilaceration of its root. The importance of diagnosing cases of this disease was shown by the fact that in a similar case, where the cyst was not recognised, one-half of the jaw had been excised.

[The paper was illustrated by photographs and casts; the dilacerated tooth was also exhibited.]

MR. STORY asked Mr. Baker did he think dilaceration of the tooth was sufficient to account for the cyst. He stated that there was only one other case on record in which a dilacerated tooth was found occupying the cavity of one of those so-called dentigerous cysts. He (Mr. Story) was of opinion that most of the cases of this sort did not come before the dentist at all, but were seen in hospitals by gentlemen practising surgery.

DR. MACSWINEY said cases of teething were sometimes met with in children, where it seemed impossible for the unaided powers of the child

to erupt the tooth, and on such occasions he had seen a soft tumid condition over the tooth, which had not escaped through the gum, and which when incised with a gum lancet had given exit to a clear viscid fluid. There was in such cases a sort of cyst under the unbroken gum and resting on the crown of the tooth. Was there any connection between those cysts of early primary dentition and the formation of such a cyst as Mr. Baker had described?

DR. CORLEY remarked that the case was an important one for the consideration of all surgeons who were contemplating the capital operation of excision of the lower jaw.

MR. BAKER (in reply) said he did not think the exact cause of such cysts as he had described was known. In the present case the dilaceration was a factor which prevented the eruption of the tooth at the proper time by twisting it out of its proper course. The cysts mentioned by Dr. MacSwiney as occurring over the milk teeth of children were pretty well recognised as of frequent occurrence, and it was undoubtedly a normal condition that a small quantity of fluid should collect between the enamel and the follicle.

A Case of Perforating Ulcer of the Stomach opening into the Left Ventricle of the Heart and Causing Death by Hæmorrhage, with Exhibition of the Specimen.

DR. FINNY exhibited an extremely rare specimen of an oval ulcer ($1 \times \frac{1}{2}$ in.) of the stomach, situated on its anterior wall two and a half inches from the cardiac and two from the lesser curvature, leading up to and perforating the heart. The floor of the ulcer was the muscular structure of the under-surface of the left ventricle, about one inch from the apex; and the ulcer, after perforating the stomach, had eaten through the diaphragm and the pericardium. The stomach was adherent to the diaphragm round the ulcer, but the adhesions were very slight and of recent date. The pericardial sac had been obliterated by adhesive inflammation, and over the whole of the left ventricle the adhesions were very dense. Through the larger of several interstices between the exposed muscular tissue of the apex a probe could be passed upwards, and was found to enter the left ventricle behind a musculus papillaris attached to the posterior mitral curtain.

The patient from whom the morbid specimen was removed had died of syncope on December 9th, 1885, preceded by the passage of blood from the bowels. Strange to say there was no hæmatemesis. At the autopsy the stomach, and the whole intestinal canal, were found full of liquid blood, and the stomach alone contained two quarts. The source of the blood was the left ventricle, and it is probable the blood escaped into the stomach during both systole and diastole.

The clinical history of the patient was as follows:—A farm labourer,

aged nineteen, was admitted under Dr. Finny's care into Sir Patrick Dun's Hospital, at the end of October, 1885, suffering from articular rheumatism of a subacute type, of a month's duration, and presenting the signs of pericarditis in the stage of lymph exudation. In a few days the friction disappeared, while there was no subsequent effusion, and all the other symptoms of rheumatism passed away. There were no symptoms pointing to disease of the stomach, with the exception of pain referable to the sixth rib, about the usual seat of cardiac impulse, and which was also referred to the right coracoid process. This pain was stated to have been present off and on for nearly five years, to be of an intermitting nature, and at times of great severity. During the patient's stay in hospital there were about four such exacerbations, which required morphine for their relief. This pain was never felt in the epigastrium or back; was not induced or relieved by the introduction of food or change of posture; nor did it bring on any nausea or vomiting. From this latter symptom he never suffered, and even during the fatal bleeding there was no hæmatemesis. For seven days before death the pain had greatly abated. During the night of December 8-9 the patient had but little sleep, and in the morning, about 8 a.m., he passed blood from the bowels, and very soon after died in syncope.

The autopsy revealed the conditions described above.

The fatal steps in the pathological history of the case were—1st. Ulcer of the stomach of unknown duration; 2nd. Rheumatic pericarditis and adhesions of the left ventricle to the diaphragm, with obliteration of the sac; 3rd. Recent activity in the ulcer perforating into the muscle of the heart.

The general muscular structure of the heart under the microscope was perfectly normal, and free from fatty degeneration, except the fibres at the floor of the perforation, which were granular and broken down, though free from all fat.

Dr. Finny referred to the anatomical relations of the liver and stomach to the diaphragm, and stated by observations made, that while, in the majority of instances, the liver by its left lobe entirely separates the stomach from the portion of the diaphragm to which the pericardium is applied, there are exceptional specimens where the left lobe of the liver is small and pointed, where a small triangular portion of the extreme front of the pericardial aspect exactly corresponds to the anterior wall of the stomach in the very position of the ulcer present in this case. This he further illustrated by reference to Braune's topographical plate taken from the frozen subject. Dr. Finny pointed out the extreme rarity of such cases as his, and when he first discovered its peculiar features he thought it was unique, inasmuch as no such specimen was to be found in the pathological museums of Dublin or London, and no record of such a case was to be met with in the "*Pathological Transactions*," or in any of

the books devoted to the subject of gastric ulcer, nor could he obtain any reference to any reported instance in the medical literature of Great Britain and Ireland.

Further research, however, showed him that it was not unique, as there are three similar cases recorded in Vienna—the first by H. Chiari in 1880, the second by F. Brenner, and the third by Oser in 1881; and each of these latter observers, like Dr. Finny, seemed to have been unaware of the other reported cases.

DR. FRAZER said he believed this case was altogether novel in Dublin. He had seen two cases of gastric ulcer, both of which occurred in young females, and were attended by rupture. In both the patients survived for a time—one for some years. He was enabled, by the recurrence of the rupture in both cases afterwards, and by circumstances brought under his notice after death, to verify the fact that the ulcers had perforated the stomach and had afterwards healed. The nearest approach to the case of Dr. Finny was one that occurred in the practice of Dr. M'Dowel, where an abscess of the liver penetrated into the pericardium and set up inflammation, and air got into both stomach and pericardium. He did not know whether or not the case was recorded in the "Transactions of the Pathological Society;" but he remembered seeing it, and there were pericardial friction sounds showing that it was an abscess of the liver which had burst. Pain recurred at intervals, and was only relieved by the patient lying on his back. Some years ago a medical man had an ulcer in the same part of his stomach, but in his case the pain was only relieved by strong pressure over the stomach. He wore a pad and had to lie on his face in order to relieve the pain, which was extreme.

DR. DUFFEY said he had observed a case of ulcer of the stomach in which an opening was formed into the lungs, causing a gangrenous abscess. He presented the specimen to the Museum, and it was now on the table of the College of Surgeons. The patient was a young woman, twenty years of age, who, after an illness of 64 days, which commenced with a pleuritic attack, developed symptoms resembling those of enteric fever. She died with symptoms of gangrene of the lung; and after her death, in the lower lobe of her left lung was found a gangrenous abscess the size of a man's fist, communicating with a small ulcer in the anterior wall of the stomach. There were no symptoms of gastric ulcer that he could recognise during life. The base of that ulcer was in close proximity to the left ventricle of the heart, but had not perforated it. The case reported by Professor Chiari occurred in a woman seventy-one years old. That of Professor Oser was in a woman of the same age. Brenner's case occurred in a woman of fifty-five. In Chiari's case the patient had symptoms of hæmatemesis and passage of blood from the intestines. There was a round hole, the full report stated, two centimetres in diameter, in the lesser curvature of the stomach, leading into a sac as

large as a walnut, which reached the left ventricle and presented an ulcerous opening. The heart was adherent to the pericardium, and there was fatty degeneration of the heart. In those three cases there were vomiting of blood and tarry stools. With respect to Dr. Finny's case, it had occurred to him that the perforating ulcer might have set up sufficient irritation in the diaphragm to cause adhesion between the adherent pericardium and the diaphragm, and the subsequent perforation. He did not think that the gastric juice could have had so much influence as Dr. Finny attributed to it. A feature in many cases of gastric ulcer was the great latency of the symptoms.

DR. HENRY KENNEDY said, as regarded pain, a great deal depended on the situation of the ulcer. According to his experience, when the ulcer was on the anterior wall of the stomach, the suffering was very much less than in other cases, and was also intermitting. On the other hand, when the ulcer was down near the pylorus, the pain was nearly constant on the occasions of taking food. He had met with cases in which the patients were only relieved by lying on their faces. When they went to sleep in the ordinary position they would awake finding themselves lying on their faces, as if, on the occurrence of irritation, a sort of instinct had forced them to assume the easiest posture.

The PRESIDENT remarked that Dr. Finny, speaking of the manner in which the ulcer, after perforating and causing an adhesion of the pericardium, made its way to the ventricle of the heart, laid stress on what he called solution by the gastric juice of the muscular wall of the heart. That seemed rather a startling novelty in pathology, and he should prefer to arrive at some other explanation of the fact. The idea of solution by gastric juice was suggested by Chiari's case, in which it was stated that the muscular fibre of the heart round the situation where the rupture occurred was in a condition of fatty degeneration. Unless there was some very good evidence that the solution in Dr. Finny's case was caused by the gastric juice he would incline to think that some form of degeneration was present also. Hardly any part of the abdominal viscera was subject to so much irregularity, as to both position, size, and shape, as the left lobe of the liver. Therefore, what had occurred in Dr. Finny's case did not present any great difficulty to his mind.

DR. DUFFEY said there was one circumstance mentioned in Chiari's case, which, although no weight was attached to it by the reporter, might be of importance—namely, that in the wall of the sac close to the opening into the stomach a hard brittle mass was found, which chemical examination proved to be composed chiefly of silicates, and which was probably a piece of glass that had been accidentally swallowed.

DR. MACSWINEY said that solution of tissue by gastric juice was only possible after there had been necrosis of the tissue. In Dr. Finny's case a portion of the pericardium might have become dead tissue.

DR. FINNY, in reply, said in his case the specimen contained no foreign body. He thought the fact of a chamber having been formed between the heart and the pericardium showed that probably a gastric ulcer first formed the abscess, and that it opened from the stomach, forming a smaller one underneath the diaphragm, and from thence reached the pericardium. Having regard to the slight character of the adhesion between the outer surface of the stomach and the diaphragm, he did not think that the passing of the ulcer through the diaphragm could have set up such pericarditis as was found in the case. He thought that pericarditis was due to a rheumatic attack which had preceded the perforation of the diaphragm by the ulcer from the stomach. Nor did he see any difficulty about the solution of the muscles of the heart by the gastric juice. Dr. Purser and Dr. Bewley, who had examined the floor of the ulcer and the granular muscular tissue of the heart, would bear him out in the statement that not the least appearance of fatty degeneration was exhibited by the portions of those parts that were examined under the microscope. The base of the ulcer and the muscular tissue of the heart were turned into a granular *débris*, which was the result of the solution. The rest of the heart was perfectly healthy, and showed no sign of fatty degeneration whatever. Nor did he see why the heart should not have suffered from the action of the gastric juice, when they saw that the tendinous portion of the diaphragm, which opposed the progress of the ulcer, was dissolved by the gastric juice at the floor of the ulcer. Having thus gone through the diaphragm, which was of its full thickness, the gastric juice might have acted in a similar way on the muscular tissue of the heart.

Specimens of Bright's Disease. By DR. A. W. FOOT.

These kidneys are representative examples of the last stage of parenchymatous nephritis when the organs have undergone atrophic changes. They are the variety of Bright's kidney, called by G. Johnson the "small fatty kidney."

They are symmetrically affected, are both reduced in size, weighing together $6\frac{1}{2}$ oz. (about half their normal weight). The pallid surface is marbled with pale yellow, smooth areas, defined by surrounding pinkish, because more vascular districts. Several cysts are observed over their exterior. They have not the red brown colour, the roughness, toughness, or diminished cortex which are obvious features in the small contracted kidney or "cirrhosis" of interstitial nephritis.

The heart presents the appearances of a notable, though not extreme, degree of hypertrophy of the left ventricle without valvular disease or atheroma in the aorta. The hypertrophy was becoming changed from the simple into the eccentric form, because already the ventricle is dilated beyond its usual dimension. The pericardium was universally adherent, but had recently become so as it could be peeled off without

any great difficulty. The heart, empty of coagula, freed from the pericardium and any superfluous parts of its large vessels, weighed 16 oz.—about double its usual weight. The lungs presented the features of œdema and capillary bronchitis.

The specimens were obtained from the body of a labouring man of thirty-three years of age, who had been habitually exposed to the cold and moisture of the Wicklow Mountains, in which he lived. He was admitted into my wards in the Meath Hospital, 1st December, 1885, at which time he had the sallow pallor of Bright's disease. His urine was loaded with albumen. He had ascites and general anasarca, and a copious purulent expectoration from the bronchial tubes. He dated his illness from cold four or five months previously, which had been quickly followed by œdema of the face, legs, and genital organs. Since this cold he had frequently had epistaxis and cramps in the legs and forearms. Immediately after admission the total urine of twenty-four hours was collected, and amounted to but 38 fl. oz., clear, pale, 1011 sp. grav. The quantity of urea in it was 5.53 parts per 1,000. The total quantity of urea in the 38 fl. oz. was 91.87 grains. Next day (5th Dec.) the urinous odour of his breath was very perceptible. In a few days diarrhœa came on, from six to eight motions in the twenty-four hours; getting rid, probably, of some of the urea the kidneys failed to eliminate. No effect was produced upon the dropsy by rest in bed, milk diet, hot air and hot water baths given on alternate days. *His sight he made no complaint of,* but said, in answer to inquiries, it was "as good as ever." He died quietly on the 20th December.

It was remarkable in this case to what a degree the man preserved his appetite. In answer to inquiries on the subject, he said he "could eat anything at all." Bartels has observed this matter, and how, even with this capacity for food, the anæmia, emaciation and loss of strength increase uninterruptedly. This fact, he remarks, should not cause astonishment, when we bear in mind the enormous quantities of albumen that are eliminated with the urine in this disease. The hypertrophy of the left ventricle in this case is attributable to the secondary atrophy of the kidneys; it is the consequence of the process of contraction, and is invariably absent in the bodies of those who succumb at the height of the chronic nephritis.

DR. HENRY KENNEDY said that in the cases now before the Section it was mentioned that there had been adhesions to the pericardium. Some years ago he inquired into this point, and found that in the bulk of the cases in which there were adhesions the heart was enlarged. In some cases that he had seen of Bright's disease albumen disappeared altogether from the urine towards the end.

DR. MACSWINEY asked could Dr. Foot give any explanation of contracted kidneys occurring in this man, who was a young countryman,

only thirty-three years of age, and with respect to whom there was no history of gout, or rheumatism, or syphilis, or drink, or lead. One circumstance in the present case was not in accordance with what was generally met with in cases of chronic, contracted, or gouty kidneys—namely, the urine was clear, its specific gravity low, the albumen abundant, and the urea rather scanty.

Dr. FOOT (in reply) said he did not think the adherent pericardium had much to do with the hypertrophy in the case, because of the effectiveness of the valves. Dr. MacSwiney had misunderstood the kind of kidneys these were. He had distinctly stated that they were not the small, red, tough, rough, contracted kidney of cirrhosis or interstitial nephritis, but were an advanced stage of the large white kidney. They were the small white kidney into which the large white kidney turned, and in which the urea was scanty and the albumen copious—just the reverse of what was the case in the sclerotic kidney. The man was exposed to causes which the ætiologist looked on as the most reliable for the production of the disease. He lived in a wretched cabin on a mountain side, and was habitually exposed to cold and moisture. He said that he took a “sup of drink” whenever he could get it, but that the occasions were rare.

MEDICAL SECTION.

President—F. R. CRUISE, M.D.; President and Fellow, King and Queen's College of Physicians.

Sectional Secretary—A. N. MONTGOMERY, M.K.Q.C.P.

Friday, January 29, 1886.

DR. FINNY in the Chair.

Therapeutic Uses of the Digestive Ferments.

DR. PURSER read a paper on the above subject. [It will be found at page 193.]

DR. HENRY KENNEDY took exception to Dr. Purser's observations about the effect of pepsine, of which he had had favourable experience himself in children with whom imagination could not be said to operate. How pepsine acted he was unable to explain. Some preparations of pepsine with glycerine were calculated to develop an unpleasant smell, which made it disagree.

DR. FALKINER remarked that when he was at Hamilton and Long's there were 65 gallons of the preparation made and prescribed in Dublin within a year, and some of Long's pepsine after eight years was as good as the day it was made.

DR. WALTER G. SMITH regarded Dr. Purser's conclusions as founded

on uncontrovertible data. It was high time to protest against the illogical and irrational mode of using so-called aids to digestion, which were sent abroad wholesale under the guise of scientific foundation. The earliest preparation of the article was one that made some stir—namely, pepsine wine, which was devoid of any digestive powers, and was driven from the field by more active advertising. The real uses of ferments were clearly indicated by Dr. Purser, and were those to which many practitioners restricted themselves—namely, the preparation of food before it was put into the patient's stomach or into the rectum. One of the most important preparations was that of nutritive enemata.

DR. J. W. MOORE said that rectal alimentation was one of the principal uses of digestive agents, from the addition of which to nutritive enemata he had seen good results.

DR. ATTHILL said he was sure Dr. Purser's remarks were based on scientific principles, but possibly some of his deductions were not strictly correct; because experiments carried on outside the body could not be identical with experiments inside. While sensible that there was a vast amount of humbug in the sale of digestive ferments, he did not agree with Dr. Purser that those ferments were absolutely useless, having himself prescribed pepsine with good results, especially in the case of children and delicate women. In artificial feeding *per anum* the peptonised food was of the greatest importance. He had performed ovariectomy seventy times, and in cases of vomiting, where artificial feeding *per rectum* became necessary, he formerly found the only food absorbed in that way was cold beef tea and alcohol.

The CHAIRMAN (DR. FINNY) concurred, from his own experience, with Drs. Kennedy and Atthill as to the value of the therapeutic influence of pepsine, which he believed to be of great use in imperfect digestion, in spite of the chemical and physiological reasons brought forward against it by Dr. Purser. To administer drugs upon the principle of strict adherence to chemical reasons would lead to their giving up the administration of drugs altogether. He had found great advantage from the liquor pepsine where the gastric digestion was delayed, and hence he protested against Dr. Purser's statement that pepsine employed in the ordinary way was an utterly useless ingredient.

DR. PURSER replied.—The method of extracting digestive ferments with glycerine was very well known, glycerine being one of the most powerful solvents. He was prepared for the protest made as to the use of pepsine, and had anticipated the objection in his paper. When a student, with more faith in drugs than now, he took pepsine and could not say it did him the smallest particle of good. As to the effect of medicine on children and delicate women, he did not say the effect was produced through the imagination; but he did not know anybody who gave pepsine and nothing else. The diet was always regulated to make

it more easily digestive, and pepsine was prescribed with acid or aromatic water, and aromatic water would often cure gripes in children. To say the thing was different inside the body and outside the body showed an erroneous conception of digestion which did not take place inside but outside the body. The mucous membrane of the stomach was just as much outside the body as the palm of the hand. The preparations were of some value for rectal alimentation.

Fœtid Expectoration from the Lung.

DR. H. KENNEDY detailed two instances, both in young females, where a very profuse expectoration, attended by a most offensive odour, occurred. The fœtor was so great as to diffuse itself through a large ward, like what occurs in gangrene of the lung. The physical signs were in each case confined to one lung, and were due to what is now known as chronic strumous pneumonia. In each case there were slight signs of hectic, with the nails curved; whilst menstruation was irregular. Under the use of a combination of powdered uva ursi and charcoal the patients improved much in their general health, and the fœtor quite ceased at the end of ten days, and in about a month each patient left hospital. No local treatment in the way of inhalation was used.

DR. R. A. HAYES instanced the case of a woman in Dr. Steevens' Hospital whom he had seen at the request of a colleague; the patient was the subject of a fœtid bronchitis. He suggested an inhalation consisting of a combination of creasote, carbolic acid, iodine, and spirit, and in twenty-four hours the smell decreased and disappeared entirely in a few days.

DR. WALTER G. SMITH said he had seen several cases of pulmonary gangrene or abscess which was produced often by putrefactive bacteria in the air passages, irrespectively of the lung. The use of charcoal had been over-estimated. It would absorb gases, fœtid odours, and abstract alkaloids in the dry state, but once thoroughly wet its deodorising qualities ceased. The distance to which drugs penetrate by inhalation into the air passages was much less than was generally supposed, it being doubtful if they get beyond the trachea, much less into the air passages and lungs. He doubted that the smell of gangrene of the lung could be diminished in that way, and said the rational plan was to give plenty of fresh air.

DR. J. W. MOORE, MR. DOYLE, and MR. FOY, also took part in the discussion, and

DR. H. KENNEDY replied.—The treatment suggested by Dr. Hayes would of course now be first adopted. He had seen marked improvement from charcoal treatment—the charcoal being given with water or in biscuits, five grains in each biscuit. The uva ursi was a good medicine and was inexpensive. It affected ordinary bronchitis, and had been given a century ago in cases of decline.

CLINICAL RECORDS.

Case of Suicide by Butting the Head against a Stone Wall. By WILLIAM ALLAN, J.P., L.R.C.S.I., L.M., F.R.G.S., &c.; Assistant Colonial Surgeon, Bathurst, Gambia, &c., &c.

BURAY SENGORE, an adult male black, undergoing imprisonment with hard labour in the gaol of Bathurst, for larceny, committed suicide in the following manner, in the presence of witnesses, on the morning of the 3rd of December, 1885. He had been an inmate of the gaol from the 13th of July, 1885, and had not during that period exhibited any symptoms of insanity.

The case has, in my opinion, much interest in a medico-legal point of view, as if he had not been seen by witnesses to commit suicide it might have been reasonably supposed that—on the body being found lying with a lacerated wound on the scalp and the bones of the head fractured—he might have been struck by a prison-warder or a fellow-convict. There was no scaffolding work going on in the gaol at the time, so this fact does away with any idea that he had fallen from a height, and so received injury.

The history of the case is as follows:—On the morning of the 3rd of December he took his breakfast as usual. After eating, he sat down in the yard behind the kitchen. That morning his wife had been brought into the gaol as a prisoner convicted for larceny; he saw her, and a fellow-convict said to him, "Look, your wife has come." This circumstance seemed to have acted on his mind, for, on being summoned for labour duty, he did not respond at once, and on being spoken to again he started off at full speed towards the latrines, built of stone, and dashed the vertex of his head against the building. So great was the concussion that he dropped dead without a struggle. The distance run would be about fifty feet. A mark where his head struck was made on the wall, but no stain of blood. A small quantity of blood flowed from the scalp wound, and about ten minutes after copious hæmorrhage took place from the nostrils. The body rebounded some three feet from the wall. He was a tall man and of spare build.

I have examined the skull, and found injuries as follow:—Lambdoidal suture intact, but nearly two-thirds of the sagittal suture open, and, where it joins the coronal, is a small fracture of the right parietal bone. The whole of the left coronal suture was freely opened, the right intact. The frontal bone was fractured for a little more than one inch right through the bone. The corresponding parts of the membranes and the brain itself were lacerated.

SANITARY AND METEOROLOGICAL NOTES.

Compiled by J. W. MOORE, M.D., F.K.Q.C.P., F. R. Met. Soc.

VITAL STATISTICS

For four Weeks ending Saturday, January 30, 1886.

The deaths registered in each of the four weeks in the sixteen principal Town Districts of Ireland, alphabetically arranged, corresponded to the following annual rates per 1,000 :—

TOWNS	Weeks ending				TOWNS	Weeks ending			
	Jan. 9.	Jan. 16.	Jan. 23.	Jan. 30.		Jan. 9.	Jan. 16.	Jan. 23.	Jan. 30.
Armagh -	15·5	5·2	25·8	20·7	Limerick -	33·7	29·7	22·9	32·4
Belfast -	25·6	29·4	25·6	24·0	Lisburn -	19·3	29·0	38·7	24·2
Cork -	18·8	31·2	16·2	35·0	Londonderry	28·5	23·2	26·7	19·6
Drogheda	12·7	29·6	21·1	4·2	Lurgan -	25·7	41·0	25·7	41·0
Dublin -	27·6	32·3	29·2	30·6	Newry -	10·5	38·6	21·1	24·6
Dundalk -	17·5	17·5	26·2	17·5	Sligo -	9·6	24·1	4·8	19·2
Galway -	26·9	23·5	30·3	37·0	Waterford -	37·0	25·5	18·5	44·0
Kilkenny	16·9	12·7	46·5	29·6	Wexford -	38·5	42·8	42·8	12·8

In the week ending Saturday, January 9, the mortality in twenty-eight large English towns, including London (in which the rate was 22·4), was equal to an average annual death-rate of 22·5 per 1,000 persons living; in Glasgow the rate was 28·7; and in Edinburgh 16·1. The average annual death-rate represented by the deaths registered in the sixteen principal town districts of Ireland was 25·7 per 1,000 of the population.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 2·0 per 1,000, the rates varying from 0·0 in Limerick, Newry, Kilkenny, Drogheda, Wexford, Dundalk, Lisburn, and Armagh, to 5·1 in Lurgan; the 5 deaths from all causes registered in the last-named district comprising 1 from measles. Among the 109 deaths from all causes registered in Belfast are 1 from measles, 3 from scarlatina, 2 from whooping-cough, 1 from diphtheria, 1 from simple continued fever, and 1 from diarrhœa; and the 29 deaths in Cork com-

prise 1 from measles, 4 from scarlatina, and 1 from typhus. One of the 2 deaths registered in Sligo was caused by typhus.

In the Dublin Registration District the births registered during the week amounted to 195—109 boys and 86 girls, and the deaths to 195—91 males and 104 females.

The deaths represent an annual rate of mortality of 28·8 in every 1,000 of the population, estimated to the middle of the present year; omitting the deaths of persons admitted into public institutions from localities outside the district, the rate was 27·6 per 1,000.

Nineteen deaths from zymotic diseases were registered, being 20 under the number for the preceding week, and 13 below the average for the first week of the last ten years; they comprise 3 from scarlet fever (scarlatina), 1 from typhus, 8 from whooping-cough, 1 from ill-defined fever, 1 from enteric fever, 1 from diarrhœa, &c.

In the week ending Saturday, January 16, the mortality in twenty-eight large English towns, including London (in which the rate was 23·9), was equal to an average annual death-rate of 23·8 per 1,000 persons living; in Glasgow the rate was 26·5; and in Edinburgh 22·1. The average annual death-rate in the sixteen principal town districts of Ireland was 30·1 per 1,000 of the population.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 3·4 per 1,000, the rates varying from 0·0 in ten of the districts to 10·5 in Newry; the 11 deaths from all causes registered in that district comprising 2 from whooping-cough and 1 from diarrhœa. Among the 125 deaths from all causes registered in Belfast are 3 from measles, 3 from scarlatina, 3 from whooping-cough, 2 from diphtheria, 3 from enteric fever, and 1 from diarrhœa; and the 48 deaths in Cork comprise 1 from measles, 1 from scarlatina, 3 from whooping-cough, and 1 from diarrhœa.

In the Dublin Registration District the births registered during the week amounted to 186—101 boys and 85 girls, and the deaths to 225—118 males and 107 females.

The deaths represent an annual rate of mortality of 33·2 in every 1,000 of the estimated population; omitting the deaths of persons admitted into public institutions from localities outside the district, the rate was 32·3 per 1,000.

Thirty-two deaths from zymotic diseases were registered, being 13 over the number for the preceding week, but 3 under the average for the second week of the last ten years; they comprise 4 from scarlet fever (scarlatina), 19 from whooping-cough, 4 from enteric fever, 3 from diarrhœa, &c.

In the week ending Saturday, January 23, the mortality in twenty-eight large English towns, including London (in which the rate was

21·9), was equal to an average annual death-rate of 22·4 per 1,000 persons living; in Glasgow the rate was 28·8; and in Edinburgh 19·2. The average annual death-rate in the sixteen principal town districts of Ireland was 26·4 per 1000 of the population.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 2·7 per 1,000, the rates varying from 0·0 in ten of the districts to 5·3 in Londonderry; the 15 deaths from all causes registered in that district comprising 2 from whooping-cough and 1 from enteric fever. Among the 109 deaths from all causes registered in Belfast are 3 from measles, 3 from scarlatina, 1 from ill-defined fever, 1 from enteric fever, and 4 from diarrhœa; and the 25 deaths in Cork comprise 1 from each of the following diseases:—scarlatina, typhus, and diarrhœa.

In the Dublin Registration District the births registered during the week amounted to 168—91 boys and 77 girls, and the deaths to 200—95 males and 105 females.

The deaths represent an annual rate of mortality of 29·5 in every 1,000 of the estimated population; omitting the deaths of persons admitted into public institutions from localities outside the district, the rate was 29·2 per 1,000.

Twenty-seven deaths from zymotic diseases were registered, being 5 under the number for the preceding week, and 8 under the average for the third week of the last ten years; they comprise 2 from measles, 2 from scarlet fever (scarlatina), 17 from whooping-cough, 1 from cerebro-spinal fever, 2 from enteric fever, &c.

In the week ending Saturday, January 30, the mortality in twenty-eight large English towns, including London (in which the rate was 22·3), was equal to an average annual death-rate of 22·1 per 1,000 persons living; in Glasgow the rate was 26·5; and in Edinburgh 16·5. The average annual death-rate in the sixteen principal town districts of Ireland was 28·4 per 1,000 of the population.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 1·9 per 1,000, the rates varying from 0·0 in Londonderry, Newry, Drogheda, Wexford, Dundalk, Sligo, Lisburn, Lurgan, and Armagh, to 6·7 in Galway; the 11 deaths from all causes registered in the last-named district comprising 1 from whooping-cough and 1 from enteric fever. Among the 102 deaths from all causes registered in Belfast are 3 from scarlatina, 3 from whooping-cough, 1 from enteric fever, and 1 from diarrhœa.

In the Dublin Registration District the births registered during the week amounted to 187—93 boys and 94 girls, and the deaths to 216—123 males and 93 females.

The deaths represent an annual rate of mortality of 31·9 in every 1,000

of the estimated population; omitting the deaths of persons admitted into public institutions from localities outside the district, the rate was 30·6 per 1,000.

Twenty-one deaths from zymotic diseases were registered, being 14 below the average for the corresponding week of the last ten years, and 6 under the number for the week ended January 23rd; they comprise 1 from scarlet fever (scarlatina), 1 from typhus, 13 from whooping-cough, and 3 from cerebro-spinal fever.

METEOROLOGY.

*Abstract of Observations made in the City of Dublin, Lat. 53° 20' N.,
Long. 6° 15' W., for the Month of January, 1886.*

Mean Height of Barometer,	-	-	-	29·662 inches.
Maximal Height of Barometer (on 11th, at 9 p.m.)	-	-	-	30·287 „
Minimal Height of Barometer (on 17th, at 9 p.m.),	-	-	-	29·032 „
Mean Dry-bulb Temperature,	-	-	-	37·6°.
Mean Wet-bulb Temperature,	-	-	-	36·1°.
Mean Dew-point Temperature,	-	-	-	33·9°.
Mean Elastic Force (Tension) of Aqueous Vapour,	-	-	-	·198 inch.
Mean Humidity,	-	-	-	86·9 per cent.
Highest Temperature in Shade (on 3rd),	-	-	-	53·4°.
Lowest Temperature in Shade (on 7th),	-	-	-	24·9°.
Lowest Temperature on Grass (Radiation) (on 7th),	-	-	-	20·0°.
Mean Amount of Cloud,	-	-	-	65·7 per cent.
Rainfall (on 26 days),	-	-	-	3·244 inches.
Greatest Daily Rainfall (on 25th),	-	-	-	·901 inch.
General Directions of Wind,	-	-	-	W., S.W., N.W.

Remarks.

Although the New Year opened with very mild, dull weather, January, 1886, will be remembered as a cold, snowy month. It is true that no severe frosts were recorded near Dublin, but in many parts of the United Kingdom extremely low temperatures were noted from time to time—the lowest of all being 7° Fahr. at Newton Reigny, near Penrith, in Cumberland, on the 19th, and 6° at Rothamsted, on the 8th. Some idea of the severity of the weather may be gathered from the fact that in Dublin snow or sleet fell on eighteen days, and hail on fourteen days. Both the rainfall and rainy days were much above the average, while atmospheric pressure and temperature were as much below it. The maximal temperature did not exceed 40° from the 17th to the 27th inclusive.

The mean height of the barometer was 29·662 inches, or 0·219 inch below the average value for January—namely, 29·881 inches. The mercury rose to 30·287 inches at 9 p.m. of the 11th, and sank to 29·032 inches at 9 p.m. of the 17th. The observed range of atmos-

spherical pressure was, therefore, 1.255 inches—slightly more than an inch and a quarter. The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 37.6° , or 4.3° below the value for December, 1885; that calculated by Kaemtz's formula—viz., $\text{min.} + (\text{max.} - \text{min.} \times .41) = \text{Mean Temp.}$ —from the means of the daily maxima and minima was 37.1° , or 3.7° below the average mean temperature for January, calculated in the same way, in the twenty years, 1865–84, inclusive (40.8°). The arithmetical mean of the maximal and minimal readings was 37.9° , compared with a twenty years' average of 41.4° . On the 3rd the thermometer in the screen rose to 53.4° —wind S.W.; on the 7th the temperature fell to 24.9° —wind W. The minimum on the grass was 20.0° on the same date. The diurnal range of temperature was considerable on the 3rd, and from the 10th to the 15th inclusive, but the maxima in this period were sometimes reached at night. The rainfall was 3.244 inches, distributed over 26 days. The average rainfall for January in the twenty years, 1865–84, inclusive, was 2.243 inches, and the average number of rainy days was 17.1. The rainfall, therefore, and the rainy days were both decidedly above the average.

Sleet or snow fell on the 5th and four following days, the 13th, the 15th and six following days, the 23rd, 24th, 25th, 30th and 31st—in all on eighteen days. Hail was noted on the 6th, 8th, 13th, 16th and four following days, the 22nd and three following days, the 30th and 31st—in all on fourteen days. Ice-crystals were seen on the evening of the 19th. The air was more or less foggy on the 7th, 10th, 22nd, 25th, 26th, 27th, and 28th. Lunar halos were observed on the nights of the 20th and 22nd, and a solar halo appeared on the 28th. High winds prevailed on thirteen days.

At the beginning of the year temperature was generally high for the season.

In the course of the week ending Saturday, the 9th, the dominant systems of atmospherical pressure over the United Kingdom were alternately cyclonic and anti-cyclonic, the wind-type varying from south-westerly to north-westerly or northerly. The weather was very changeable—at times mild and again very cold and foggy. On the 6th a heavy snowstorm prevailed in the valley of the Thames.

During the second week the weather was most changeable. The distribution of pressure was cyclonic—deep depressions appearing in the far north, while elongated subsidiary disturbances travelled in an easterly direction across our Islands. Southerly winds, rain and comparatively mild weather alternated with north-westerly and northerly winds, snow, sleet, hail and frost—the changes from one type to the other being sudden and frequent.

In the third week (ending the 23rd), pressure distribution was again

mainly cyclonic, but the type was complex and variable. On Monday, the 18th, the barometer was very low over the North Sea and so continued for some days. Shallow depressions then began to advance *westwards* from Germany to the S.E. of England—cold weather was thus continued, with frequent falls of snow or sleet in many places, and occasionally clearer skies and frost.

The weather remained very unsettled and changeable in the fourth and last week. On the 24th and following days a depression lay over the Bay of Biscay, Brittany, the English and St. George's Channels. Heavy snow fell in and about Dublin on Sunday and Monday, the 24th and 25th, as well as in the S.W. of England. At 9 a.m. of the 25th the temperature in Dublin was 27·2°, and the appearance was quite Arctic. A thaw followed in the afternoon and a heavy fall of rain took place at night. The low pressure system in the S. gradually filled up, but on the 28th the barometer fell to the W. and N.W., and a new series of depressions began to come in from the Atlantic, causing showery, broken weather to the end of the month.

It is noteworthy that the cold weather appeared to be of Atlantic or North American origin—it certainly came in from the westward, at a time when no extreme cold prevailed in the N. or N.W. of Europe; and it also showed itself near the centre of an extensive and very deep atmospherical depression.

PERISCOPE.

THE CAUSE OF THE FIRST SOUND OF THE HEART.

AN interesting note on the cause of the first cardiac sound, by Dr. Gerald Yeo and Dr. J. W. Barrett, has appeared in the *Journal of Physiology*. Opinions, as is well known, have varied considerably on this point. Some observers, as Halford and Billing, looking at the relative size of the auriculo-ventricular and semilunar valves, have held that the sudden tension of the former is sufficient to produce the first sound of the heart. These observers point to the fact that just as the act of hooking back one semilunar valve abolishes the second sound, so the same act of hooking back one auricular valve, or the incompetence of the valve as a whole, impairs or abolishes the first sound; and they also point to the fact that the tracing of a cardiac contraction is a single contraction, and not a tetanus of the muscular tissue. Many careful experimenters, however, maintain that the muscular sound must be regarded as an element in its causation, and insist on the greatly increased volume of the sound in cases of cardiac hypertrophy. Drs. Yeo's and Barrett's experiments originated in a difference of opinion between them on this point, each being desirous of persuading the other of the soundness of his views.

To determine the question, a large cat and an active mongrel bull-terrier were chloroformed and subjected to artificial respiration, and the cardiac sounds were then carefully listened for by each disputant, as well as by some independent observers, after the thorax had been opened by an extensive median incision without injury to the pericardium. The veins were then compressed, and all noted that the sound became gradually slightly diminished, but did not become inaudible, the tone remaining distinct as long as the heart continued to beat. In the case of the dog, the same phenomenon was observed even after the heart was removed from the body, and the same was noted in the ventricle when removed below the valves. The authors therefore arrived at the conclusion that a definite and characteristic tone, similar in quality to the first sound, is produced by the heart-muscle under circumstances that render it impossible for any tension of the valves to contribute to its production.—*Lancet*, Oct. 31, 1885, and *Practitioner*, Feb., 1886.

AN UNUSUAL ACCIDENT.

MR. CHARLES TOMES, M.A., F.R.S., reports the case of a patient, aged about twenty-five, who recently presented himself with the intention of having the right upper lateral incisor pivoted. A week previously he had had a severe fall in the hunting field, with the result of loosening the upper and lower centrals and breaking off the lateral incisor short. On examination, however, the lateral incisor was found not to be broken at all, except that the edge was to a trivial extent chipped; but it had been driven up into its socket vertically until its cutting edge nearly corresponded with the level of the gum. Very little pain had been experienced, and when the patient was seen there was only the least trace of inflammation; the displaced tooth was so exceedingly firmly wedged into its new position that not the least motion could be detected when it was pressed upon in any direction. As it was perfectly useless in the position occupied, Mr. Tomes decided to attempt to draw it down, and, with this object, took an impression, and made a small vulcanite splint, which was to be tied on to the bicuspid on each side, and which had holes to ligature the lateral, if it could be brought down. In order to enable him to deliberate in his manipulation, the patient was placed under gas, and the tooth grasped with thin bladed stump forceps, the blades of which had been dipped in eucalyptus oil; the tooth required as much or more force than would ordinarily suffice for the extraction of a lateral before it could be stirred in the smallest degree, and when it moved from its bed it came out at once. The apex of the root, however, barely left the socket, and it was instantly replaced, and forcible pressure made upon the gum over the socket on both the labial and parietal aspects. The gum readily squeezed down on the root, yielding the sensation of there being no bone at all under the finger.

The tooth was ligatured to the splint, and has since done well, being quite free from tenderness after the first two days, and firm enough to dispense with the splint on the fourth day. The principal question to be settled, which, of course, was considered beforehand, was what plan should be adopted if it came out, which was obviously the most likely thing to happen. The choice lay between its instant replacement or the removal of its pulp and the filling of its roots prior to its replacement. Mr. Tomes decided in favour of instant replacement, because it is well known that teeth immediately replanted generally do very well, notwithstanding that they contain dead pulps, and in this case the complete breaking up of its original socket interposed considerable difficulties in the way of its becoming fixed. The pulp cavity Mr. Tomes proposes to open up and fill after the healing of the socket is presumably complete. The risk of abscess is, judging by other cases, by no means great, nor is it immediate, and the objection that the tooth may become discoloured by leaving its pulp in for a time has far less force, in Mr. Tomes' opinion, than it would otherwise have had, in consequence of a case which he treated some years ago, in which a boy knocked out his central incisor, carried it in a dirty pocket for twelve hours, and brought it to him begrimed. In this case he enlarged the apical foramen, removed the pulp entire, and filled with oxychloride of zinc, closing the foramen with gold. But though the tooth united, and has done perfectly well ever since, its colour is not satisfactory; it has the characteristic colour of a dead tooth, so that the complete removal of the pulp has not been attended with the advantage as to colour which would, *à priori*, have been expected.—*Journal of the British Dental Association.*

URETHAN.

DR. A. S. MYRTLE, of Harrogate, writing of this new hypnotic, says:—Since October I have been using urethan in a variety of cases with satisfactory results. I have used it in over fifty cases as a sedative and hypnotic, and my experience of its action encourages me to recommend the drug, believing that, in certain cases, it will prove of great value. The cases in which I have prescribed it were of the usual run of every day practice, where a sedative or hypnotic was required—general restlessness, sleeplessness, neuralgia, catarrh, certain forms of skin-affections with great irritation, also rheumatism and gout. Many of my patients had some peculiarity of constitution which prevented the use of opiates of the usual type; and it is in this special class that I think urethan will prove of great value. It does not affect the nerve-centres of circulation or respiration, but spends itself on the cerebrum. Given in gout and rheumatism in full doses, alone or in combination, it has the great advantage over morphine of not interfering with the action of the bowels or kidneys.—*Brit. Med. Journal*, Feb. 20, 1886.

In Memoriam.

RICHARD ROBERT MADDEN,

F.R.C.S., ENG., M.R.I.A.

THIS veteran member of the profession died at his residence, 3 Vernon-terrace, Booterstown, Co. Dublin, on Friday, February 5, at the ripe age of 87 years.

He was born in the midst of the stormy scenes of the rebellion of 1798, of which he afterwards became the chronicler. The youngest of twenty-one children, and the son of an eminent Dublin merchant, he entered at an early age upon the study of medicine. In 1829 he became a Member of the Royal College of Surgeons of England, and subsequently (in 1855) he was chosen to be a Fellow of that body. At the outset of his professional career MR. MADDEN married the youngest daughter of the late John Elmsley, Esq., of Berners-street, London, and of Surge Island, Jamaica. He entered the Civil Service in 1833, when he was appointed Special Magistrate in Jamaica. From that time the history of his useful life falls more within the domain of philanthropy and literature than within that of practical medicine, although happily for mankind all three great spheres of action dovetail into one another.

We cull the following account of his life from a memoir which appeared in the *Dublin University Magazine* for March, 1876 :—

“In one particular sphere of philanthropy, DR. MADDEN has worked with such fellow-labourers as Wilberforce, Buxton, and Clarkson—we mean the abolition of Slavery. The prelude to his vigorous exertions in this noble cause was his appointment, in 1833, as Special Magistrate in Jamaica. He no sooner set foot on the island than, with rigid and scrupulous straightforwardness, he spread a protecting arm around the poor negroes, whom he thenceforward did his best to guard from the miseries of hateful serfdom. Three years after this, DR. MADDEN was nominated Superintendent of Liberated Africans at Havannah, under the British Colonial Office, and in 1839, Acting Judge Advocate, in the Mixed Commission Court, under the Foreign Office. In these situations he found abundant scope for the exercise of his philanthropy, inasmuch as considerable discretionary authority was vested in him—if not actually

for slave emancipation, at least for diminishing the bitterness of thralldom. All such intrepid hostility towards tyranny made DR. MADDEN quite obnoxious to rich slavers and slave-owners; and on one occasion a mere accident averted the assassin's dagger.

"Such services were not forgotten, and in 1841 DR. MADDEN was chosen by Lord John Russell a Commissioner of Inquiry on the Western Coast of Africa. Here he laboured devotedly in the cause of humanity, and discovered that under the name of the 'Pawn System' an absolute state of slavery existed, and that, too, under the very eye of the authorities at the forts and posts established by the English Government for the protection of the negroes. During this appointment DR. MADDEN's surveillance included, among other territories in Africa, the West Coast, Gambia, and Cape Coast Castle.

"In 1847 DR. MADDEN was appointed to the Colonial Secretaryship of Western Australia, and three years afterwards he became Secretary to the Loan Fund Board, a position from which he retired a few years since.

"If DR. MADDEN had never written a line, his services in connection with the abolition of the slave trade would entitle him to public gratitude. If in the fearless discharge of his duty DR. MADDEN excited the enmity of the slave interest, he also won golden opinions from those who were really the negroes' friends. Not only abroad, but in his own country, men of the very highest eminence were foremost in recognising his signal abilities and services. It is seldom that a man succeeds in winning the unreserved approbation of such men as Lords Glenelg, Palmerston, Russell, Derby, and Normanby, as well as eliciting admiration of such members of his own profession as Gregory, Cooper, Brodie, Johnson, Crampton, Kirby, and O'Reilly. But perhaps the most valuable tribute came from the lips of Buxton and Clarkson, two of the finest champions ever furnished by humanity to the oppressed coloured race. With these men, as also with William Wilberforce, must be linked the name of our distinguished countryman.

"Notwithstanding the absorbing nature of his public duties, DR. MADDEN found time to cultivate his literary tastes, and acquire distinction as an author. In looking over his writings, besides admiring their quality and texture, one is amazed at the quantity—the more so considering his other avocations. He has written largely and excellently in the departments of politics, sociology, history, travels, and *belles lettres*. His works are so varied and numerous that we cannot refer to them in detail, but must content ourselves with briefly indicating some of the most important. No one who peruses DR. MADDEN's books can fail to appreciate their research, eloquence, and love of Fatherland, however much he may dissent from some of his opinions and conclusions. He traces the account of his country's vicissitudes with power and beauty, and leaves on record a great deal of valuable historic lore. The 'Lives and Times of the United Irishmen' make up a series of seven volumes, the publication of which

commenced in 1842 and terminated in 1846. With DR. MADDEN this work was evidently a 'labour of love.' He has undoubtedly displayed great ability, industry, and research in depicting the eventful and tragic career of the leading spirits who inspired the insurrections of '98 and 1803—men of whom it may be truly said, that if they loved their country, 'not wisely but too well,' their patriotism was, at least, unselfish and devoted, and so unlike the wretched travesty of our day, it had no mercenary tinge.

"Perhaps DR. MADDEN's best work is 'The Life and Martyrdom of Savonarola.' It affords evidence of high descriptive power, and is valuable, not only as a most interesting biography, but also as embracing the history that exercised a powerful influence on the future of the Church. DR. MADDEN writes with freedom and judgment, and his views are generally impartial and enlightened. He does full justice to the mission and genius of the great pioneer of ecclesiastical reform, and this is accomplished in a manner which leaves nothing to be desired. In fulfilling his task, he draws aside the curtain and paints with terrible accuracy, while reprimanding with emphasis the irregularity and vice into which ecclesiastics and their system has fallen since Savonarola's time. For his zeal in attempting to promote reformation, Savonarola paid the penalty of his life. That life, let foes say what they will, was one of purity and self-renunciation.

"Among DR. MADDEN's other principal works we may mention—'Travels in Turkey and Egypt,' 'The Mussulman,' 'The Infirmities of Genius' (a most agreeable and readable volume), 'Travels in the West Indies,' 'Egypt and Mahommed Ali, and Condition of his Slaves and Subjects,' 'Connection of the Kingdom of Ireland with the Crown of England,' 'The Island of Cuba, &c.,' 'Shrines and Sepulchres of the Old and New World,' 'The Memoirs of the Countess of Blessington,' 'Illusions and Fanaticisms of an Epidemic Character,' and 'The History of Irish Periodical Literature.' The last work constitutes, in its class, a most valuable addition to the national history of Ireland. Thus, while discharging with distinguished ability and fidelity the varied and onerous duties of a long official life, at home and abroad, DR. MADDEN found time to establish, by his voluminous writings, a deservedly high literary reputation."

To this tribute we have little to add. MR. MADDEN died as he had lived—an upright, honourable, serious-minded man, and his genial presence will long be missed by those who had the pleasure and the advantage of a personal acquaintance with him.

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